MESG

MESTRADO EM ENGENHARIA DE SERVIÇOS E GESTÃO

A Service Innovation Approach: The Lead User Proposal in the Multilevel Service Design Method

Luisa de Souza Gonçalves

Master Dissertation

Supervisor: Prof. João José Pinto Ferreira

Universidade do Porto

Faculdade de Engenharia

FEUP

Faculdade de Engenharia da Universidade do Porto

2015-06-26

"Without change there is no innovation, creativity, or incentive for improvement. Those who initiate change will have a better opportunity to manage the change that is inevitable"
William Pollard

Abstract

This work was motivated by the urgency to innovate in the present days. The services play an important role (over 80% of all sales) in global markets, and consequently create good opportunities to undertake.

The theme of this thesis involves the concept of innovation, which will be incorporated into a method of development of new services. In practical terms, a concept called Lead Users, that is based on the user as innovator, will be integrated into the Multilevel Service Design Method, that was developed in accordance with the current trends around the development of new services, which must be created taking into account the customer needs and experience, the value co-creation, the sequencing of activities and the holistic nature of the services.

Finally, this study aims to verify how efficient is the integration of different methods and concepts that leads the service innovation to produce positive results, and verify what practical and theoretical implications are involved in this initiative. In order to validate the research project and answer the research questions, a brief case study was conducted in a real company.

Uma abordagem da inovação dos serviços: A proposta dos *Lead Users* no Método de Desenho de Serviços em Multinível.

Resumo

Este trabalho foi motivado pela urgência de inovar nos mercados atuais. Os serviços representam importante papel (80% de todas as vendas) nos mercados globais, e consequentemente criam boas oportunidades para empreender.

O tema da presente dissertação envolve o conceito de inovação, que irá incorporar-se a um método de desenvolvimento de novos serviços.Em termos práticos, um conceito chamado *Lead Users* ou "utilizadores líderes", o qual se baseia na inovação impulsionada pelo utilizador comum, será integrado ao Método de Desenho de Serviço em Multinível, que foi elaborado de acordo com as atuais tendências em torno do desenho de novos serviços, os quais devem ser criados levando em conta a necessidade e experiência do consumidor, a co-criação de valor, o seqüenciamento das atividades e a natureza holística dos serviços.

Finalmente, o objetivo deste estudo é verificar o quão eficiente é a integração de diferentes métodos e conceitos que conduzem a inovação dos serviços a produzir resultados positivos, e quais as implicações práticas e teóricas que envolvem esta iniciativa. A fim de validar o estudo teórico e responder as questões da investigação, um breve caso de estudo foi realizado em uma empresa real.

Acknowledgements

I am grateful to the Brazilian company and staff, who dedicated time of their work to collaborate with the study and for the trust and openness to experiment and implement a completely new approach of innovation e service design for them.

I am thankful for my supervisor Prof. João José Pinto Ferreira, for the availability and guidance. Also for providing clarity and the knowledge needed to conclude this study.

I wish to express my gratitude for my family and friends, for all the support. Without them, this dissertation would not be possible.

Table of Contents

Index of Figures

Index of Tables

1 Introduction

As part of the Master of Service Engineering and Management Programme (Programa de Mestrado em Engenharia de Serviços e Gestão – MESG), this study aims to understand whether the innovation concept of Lead Users enlarges the capacity of creation of efficient and profitable services using the Multilevel Service Design, assuming that innovation and the deep knowledge of customer needs are the main foundations to a successful service offering. This was validated in the context of a service company, in order to analyze the various aspects involving the relation between both in the creation of competitive advantages in the current market.

Considering the main goals, the Master Dissertation Project was performed based on the following domains:

- Relevant literature review about a specific concept related to innovation called Lead Users (LU) and about a specific method of service design called Multilevel Service Design (MSD);
- A briefcase study performed in a small service company located in Brazil.

1.1 Motivation

The main motivation to explore an innovation concept associated to a service design method is based on the conditions to be successful in the 21st century. It means that companies need to open up and work with external elements to innovate. Through innovation, a company can survive the highest competition, fast technological changes and external and internal influences that can affect the firm negatively.

The terms innovation and services have been mentioned in numerous articles and research projects in the recent years, however, the use of a service methodology to create new services, taking into account the user innovation methods, was much less explored.

Besides the innovation trend, the high competition leads companies to create numerous methods to predict the trends for the future. Accordingly, a company that identifies new trends first than its competitors, is able to get a step forward in the market. In this sense, an innovation method that identifies trends and brings innovative ideas, fits perfectly in the current scenario. Thus, the LU concept was chosen to be explored.

According to Eric von Hippel (1988), the main concept of LU focus on the idea that lead users are ordinary consumers who are facing and dealing with needs, that are ahead of the marketplace. These users have proven to be a much richer and more accurate source of information on future market needs than "routine" users, because they are actively grappling with the inadequacies of existing products and services. By focusing marketing data collection on lead users, the result is higher quality information on emerging market needs - and thus, better product and service concepts generation.

After a literature review, the LU method was confirmed as being very effective in the products industry, but was less explored in the service industry. Therefore, a case study was performed in order to verify how effective the lead users could be in the service innovation. Thus, a service development method was associated to the Lead User concept, in order to achieve the goal.

Motivated by the statement that the creation or enhancement of services must take into account the customer needs, in order to transform the customer into a service co-creator, the deep knowledge of every aspect that surrounds his reality is crucial. Thus, holistic methods are applied to identify not only customer needs, but also feelings, sensations, value networks, usability and many others specific aspects to capture this important pool of information, aiming at the creation of effective new services. Finally, the method chosen to be part of this study was the MSD (Multilevel Service Design, Patricio, 2012), which considers and systematizes the deep knowledge of the customer as the main point to develop effective services.

By gathering both concepts, some unexplored and even unexpected results can be reported and the relevance of the service innovation in current and future markets can be reinforced.

1.2 Objectives

As mentioned before, the main goal of the dissertation is to understand whether the innovation concept of Lead Users enlarges the capacity of creation of efficient and profitable services using the Multilevel Service Design.

To do this, firstly, this study focuses on investigating and understanding the current context of the user innovation in the service creation, trying to analyze the methods and its interaction.

Secondly, and based on the concepts of LU and MSD method acquired during the literature review, an exploratory case study approach was performed, in order to test the relevance of Lead User concept in the service creation, in a real company focused on generation and analysis of data to enable the customer relationship management (CRM) of the client.

Additionally, a secondary objective is the proposal and validation of the use of the MSD method integrated to the LU approach, which possibly allows designers to get involved in user innovation ubiquitously implied during the service creation process.

1.3 Dissertation Structure

This dissertation is organized in 6 chapters, and each of them presents specific contents, in order to achieve the main goals and answer the research questions.

The chapter 1 presents an introduction containing the motivation, contextualization and research goals of the dissertation.

The chapter 2 describes the research design applied in the study and the theoretical justification of methodological concepts adopted to achieve the research goals.

The chapter 3presents a literature review, with definitions associated to innovation and services, as well as the description of the LU concept and all the aspects involving the MSD method, such as value constellation, service concept, value co-creation, service blueprints, etc.

The chapter 4 presents the proposal related to the integration of the LU concept to the MSD method, through the analysis of the acquired information.

The chapter 5 describes the case study, including the presentation of the company and the case, as well as, the analysis, discussion and validation of the proposed integration.

The chapter 6 presents the main conclusions of this dissertation that analyzes the validity and the contributions of this dissertation as the defined goals, as well as, answers the research questions. It also presents suggestions for future works.

2 Research Design

This section is dedicated to define the research design, in order to link the data to be collected with the research questions, and ultimately to the main conclusions (Yin, 2009).Also according to Yin, the research design is a “blueprint”, dealing with the questions to be studied, which data is relevant and how to analyze the results. The main purpose of this structure is to avoid evidences that do not address the research questions.

The dissertation starts with a literature review about the innovation methods, service design methods and service innovation. Firstly, articles and books about the subjects of famous authors are analyzed. Secondly, some internet data (texts, white papers, etc) is analyzed, in order to build a knowledge base, which contains traditional concepts and different points of view regarding the problem. The relevant information is selected and the state of art is visualized. The outcomes of the whole activity are the build of the research questions and the build of a valuable theoretical base, in order to generate a cohesive and consistent dissertation.

Due to the holistic nature of the theme, some qualitative approaches are performed in order to analyze customer behavior related to needs, experience, etc. It means that observation and other holistic methods were allied to interviews and survey design techniques, which are valuable tools for assessing opinions and trends, and finally, a brief case study was performed to reinforce and evaluate the concepts over a broader scale.

Basically, a case study is the method used to narrow down the research into the application of the methods (LU and MSD) to a specified type of service and context. In this context, the case study performance was useful for testing whether the theories and models presented in this dissertation actually work in the real life. In the design of a case study, it is important to plan and design how the study is going to be addressed and make sure that all collected data is relevant. Unlike a scientific report, there is no strict set of rules, so the most important part is making sure that the study is focused and concise, otherwise irrelevant information can be produced.

According to Howell (2013), the research methodology is a way to solve the research problems or answer the research questions. It is the study of how investigation is done scientifically. Differently, the methods are techniques employed in a process to conduct a scientific investigation and others ordinary activities.

Thus, the methodology employed in this study is related to a mixed methodology using quantitative and qualitative techniques. According to Shaffer et al. (2004) the combined use of qualitative and quantitative techniques sequentially or in parallel, can take an equal or differential status when setting research questions, and are used at the same stage or in different phases of a single study.

In conclusion, semi-structured interviews were performed to identify the markets and trends, and unstructured interviews, observation (Appendixes B,C,D and E) and workshop were performed to identify needs and the experience aspects. These are the basic structure to build the analysis and the conclusions about the LU concept/method implied in the MSD method, which can be supported by other methods related to the service concept generation and the study of experience, such as the Customer Experience Modeling (Teixeira et al., 2012).

2.1 Data Collection

By definition, data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes.

A formal data collection process is necessary to ensure that the data gathered is accurate and the findings are valid(Sapsford et al., 2006).

The data collection used in this study combined interviews, a survey, observation and a workshop:

Interviews – A set of interviews was performed during the study to raise some basic characteristics about the customers profile, needs and their knowledge about the marketing intelligence. Other interviews were addressed to experts in order to acquire a knowledge base about the market, the latest technology practiced in the current market, in order to identify the trends that are one of key elements of the study in the early stages. This part used the standard paper-and-pencil & calling approach.

Surveys –A simple survey on social networks was performed in specialized associations to know some generic aspects about potential clients for the company.

Observation –In this study, observation is the major tool to understand the customers' needs and how they could co-create value in particular services. This type of data

collection was used in almost every stage of this study. For example: besides the interviews, it was important to observe the lead user in action because, by his own, he is able to orchestrate his own experience and create value through his own journey, that may be common to the market in the future.

The type of observation practiced in the study was more qualitative or less-structured (Sapsford et al., 2006), in order to explore the holistic and natural environment, as much as possible.

Workshop - As seen in the previous chapter, the workshop is part of the lead user method related to the generation of the concept. It is considered a data collection because relevant information is generated, which explores the innovation in the maximum scale. This data has a great impact over the main conclusions because more innovative services can be created.

2.2 Data Analysis

According to Sapsford et al. (2006), the data analysis consists of the transformation of "raw" data into variables that can be analyzed to produce the information contained in the result sections.

The data analysis is crucial to guarantee the validity of the research and get important conclusions. It consists in comparing the data with the categories identified and with the literature reviewed.

During the application of the service design method and the integration with the Lead user concept, the data analysis is required after the end of every phase and these preliminary conclusions are used in the next steps cyclically. It means that the service design method allied to innovation methods are based on the correct data collection and data analysis from the beginning until the end of the activity, in order to produce consistent outcomes to answer the research questions and generate effective services.

3 Literature Review

This chapter aims to offer a relevant literature review to the current dissertation. Considering the goals, the literature review focus on the following domains:

- Topics concerned to innovation and services;
- Exploration of the current scientific knowledge about the LU concept, introduced by relevant points about user innovation followed by the LU method state of art;
- Exploration of the proposed MSD method and its importance to the new service development;
- Identification of current research, which associates LU concept and services.

3.1 Innovation – Some relevant aspects

Innovation is surrounding the mankind for a long time. According to Johnson (2010), the human being evolution was possible because of the constant and persistent innovation of life. The nature is adapting all the time to pursue the instinctive running to protect and prolong the species life. According to Darwin's theory, the survivor in the life race is not the smartest, but the most adapted to the huge transformations of the planet environment. It means that the human species innovates naturally on an old instinct of surviving and the innovation is present in the most primary forms of life and also in the most intellectually advanced ones, because the survival depends on it. Thus, it is a natural characteristic of the human behavior.

By comparing and inserting innovation in the life evolution, Johnson (2010) intended to prove that life innovation is done according to individual needs of adaptation, which will be common to a group of individuals in the future. Due to this statement, it is possible to conclude that the species innovates because of the urgency of adaptation and evolution. In our case lead users or potential lead users innovate due to a strong need that, if shared may become a trend among the remaining elements, aiming at the same need of adaptation. Another important aspect of Johnson's statements is related to the formation of networks where the information or the raw materials for innovation flows.

Regarding the history, the first half of the twentieth century was marked by the strong industrialization and innovation in production processes, such as Fordism and Taylorism. It was precisely in the twenties, that management and economy researchers started

investigating the processes and factors that resulted in the gain of competitive advantage in business, highlighting names such as the austrian economist Schumpeter (1976), who was one of the pioneers of the idea that innovation or the "creative destruction" and the gain of competitive advantage were strongly related.

Since the seventies, many studies related to the theme have been published and the democratization of information access reinforced the importance of the subject to the current and future markets. However, other authors contributed to the previous theories such as Drucker (1985), who affirmed that "Innovation is both conceptual and perceptual…Successful innovators…look at figures, and they look at people. They work out analytically what the innovation has to be to satisfy an opportunity. And then they go out and look at the customers, the users, to see what are their expectations, their values and their needs". By this time, many other researchers have emerged to add new and relevant points about innovation, such as the incremental and radical innovation definitions presented by Abernathy and Clark in the eighties, and Clayton Christensen (1997) with his classical book The Innovator's Dilemma in the nineties. Christensen proposed that dominant companies, in their current markets, lost their leadership position and failed, because they have not invested, or had no interest in adopting emerging disruptive technologies in their sectors. It may even means that they did not pay attention to the trends and changes.

Due to the relevance of this study, the most important name to be mentioned of this period is Eric Von Hippel (1988), who has been studying the innovation promoted by users, adding the concept of Lead Users (LU) which gathers the innovation principles to a forecast system for trend identification. As mentioned before, this concept takes into account the ordinary individual orchestrating the innovation system.

During this literature review, another name was also highlighted among others, due to the theory of open innovation. Chesbrough (2006) provides knowledge, mainly from the perspective of how firms innovate in an open system, which is crucial to contextualize the user innovation and the open source innovation initiative. According to the author, in the open innovation paradigm, firms use internal and external ideas, as well as internal and external paths to market, on the same level of importance as those reserved for internal ideas and paths to market in the earlier era. It also explicitly incorporates the business model as the source of both value creation and value capture.

Differently from open innovation, in the user-driven innovation, firms seek and get a feedback tool that helps them listen to customers or partners, by using it in the early idea-generating phases and later in the implementation, as they set up a feedback loop. However, the companies still turn the idea into a business almost entirely through their internal innovation capabilities.

Thus, the differentiator between both lies on the level of involvement they get from external partners, customers or suppliers.

Although the open innovation concept is not the focus of this study, some issues involving the theme can be incorporated to the service innovation and lead users concept, in order to understand, for example, the knowledge flow, which present show firms can exploit external knowledge. Nonaka & Konno (1998), gives a more clear view about how the knowledge flows and how its transformation occurs, reminding that the boundaries of the organization have new limits which enable the free traffic of knowledge between the internal and external environments. The knowledge creation can be seen as a dialectical process, in which various contradictions are synthesized through dynamic interactions among individuals, the organization, and the environment (Nonaka & Toyama, 2003).

Thus, ideas come not just from the scientist's bench, but from groups of creative people within the organization, from idea hunters who uncover ideas inside and outside the organization, from formal relationships with universities and venture capital funds, from efforts to cross-fertilize within an organization across divisional and industry boundaries, and from single creative individuals who may be maintained outside the organization, whose efforts are dedicated to the organization's needs or consulting with customers who are lead users to provide firms with ideas about discovering, developing, and refining innovations (von Hippel, 1988).

Thus, the relations between the open innovations and the lead users are also located in inter-organizational context of innovation (Vanhaverbeke, 2005), which involves not only consulting customers and knowledge flows, but the immersion in a network of complex connections, in which the value network starts inside the company and overflow to the outside.

In summary, the LU concept can be applied under the user innovation approach or under the open innovation approach. It means that the potential innovators can be individuals or

companies. It enlarges the possibilities of being a step forward of the trends, due to the knowledge flowing through the organization borders.

3.2 Services – Some relevant aspects

According to Fitzsimmons and Fitzsimmons (2008), "a service is a time-perishable, intangible experience performed for a customer acting in the role of a co-producer. Lovelock (1999) defines services as:

> "Services are economic activities that create value and provide benefits for customers at specific times and places, as a result of bringing about a desired change in—or on behalf of the recipient of the service"

Service customers expect to obtain value from access to goods, labor, systems, etc, and do not take ownership of any physical elements involved (Lovelock et al., 2010).

For Bitner et al. (2008), services are process and experience based, and in many cases dependent on human, interpersonal delivery systems, suggesting a need to focus on process, delivery, experience and innovation.

The distinctive characteristics of services, such as, intangibility, simultaneity, heterogeneity and perishability make services a difficult subject to be defined. It becomes more complex, taking into account the intangibility of numerous inputs and outputs during the service delivery(Lovelock,1999).

In most countries, the service sector of the economy is very diverse and includes a wide array of different industries, ranging in size from huge enterprises that operate on a global basis to small entrepreneurial firms that serve a single location.

In developing countries the service sector also plays an important role. For example: In Brazil, the service sector accounts for over 75% of formal employment in the country and 68,5% of GDP (gross domestic product), according to MDIC[1]e IBGE[2],while the indicator reaches 80% of GDP in developed countries. The sector is so imperative that even the recent brazilian financial recession did not threaten its foundations.

[1]MDIC – Ministério do Desenvolvimento, Indústria e Comércio Exterior do Brasil
[2]IBGE – Instituto Brasileiro de Geografia e Estatística

3.2.1 Service Innovation

According to the Oslo Manual (OECD,2005 - p. 30), service innovation is defined as:

> "… Service innovation is often immaterial in nature and therefore difficult to protect. Services have a higher degree of customization. There is a closer interrelationship between the development of new services and the processes to produce them".

Similarly, Tekes[3]has adopted (Tekes EPSIS[4]final report, 2011 -p.15) the following definition:

> "… A service innovation is a service or product process that is based on some technology or systematic method. In services however, the innovation does not necessarily relate to the novelty of the technology itself but the innovation often lies in the non-technological areas. Service innovations can, for instance, be new solutions in the customer interface, new distribution methods, novel application of technology in the service process, new forms of operation with the supply chain or new ways to organize and manage services…"

The concept of service innovation was first mentioned in Miles (1993) and has been very discussed in the last twenty years. He listed a series of characteristic features of services such as the intangibility, perishability and simultaneity of services, and even problems in storing the service, the difficulty in demonstrating the service to the client, and associated them with specific types of innovation. According to Miles (2001), the emerging service industry leads changes in the innovation processes across the whole economy and markets.

The service innovation research is closely articulated into the trends in innovation studies, and its challenges are being largely debated. Based on this statement, the association with Lead Users and other innovation methods and concepts, fits perfectly into the New Service Development Research. In addition, service designers agree that the key for the creation of new effective services is the high involvement of the customer in the production of the final service. They also agree that the value co-creation is possible just because of the deep knowledge of customer needs based on the customer experience knowledge and its requirements. Thus, this co-production gathered to the intangibility nature of services, require different approaches of the manufacturing innovation methods because it captures psychological aspects, becoming this field of study complex and, at the same time, with a huge potential of innovation through the articulation into different methods of different industries and markets.

[3]TEKES - Finnish Funding Agency for Technology and Innovation of Finland
[4]EPSIS - European policies and instruments to support service innovation.

Hertog (2000), identified four “dimensions” of service innovation, which takes a different direction from the usual manufacturing innovation approach. These dimensions start with the service concept, the client interface, the service delivery system and end with the technological alternatives. Since then, the theorizing of each of these domains has been performed in large scale. Names like Lovelock (1999) in the service delivery system systematization and Edvardsson (1996) in the service concept studies, are largely mentioned in the service innovation literature.

Another important study related to service innovation is the open service innovation (Chesbrough, 2011), in which the ideas of the co-production and the customer involvement in the process are reinforced. This type of innovation goes beyond the firms’ borders, therefore, the need for flexible and holistic dimensions are crucial. Chesbrough remarks that effective services innovation requires new business models that profit from internal innovation initiatives and stimulate external innovation activities that add value to the own business.

A further relevant approach for this study is the service innovation as a process. According to Bitner et al. (2008), as the new service development process progresses toward the final design and implementation, the initial service idea or the developed concept, must be more concrete or even prototype to customers and employees. In this stage, roles and responsibilities of customers and service providers are clarified and the service encounter is dimensioned and analyzed for the first time. A key to be successful is the ability to describe the service process characteristics and depict them so that employees, customers, and managers can understand, objectively, what the service involves and know what are their respective roles in the delivery and co-creation. Thus, the authors suggests the use of the service blueprinting as a tool, that results in a visual rendering of the service process, underlying organizational structure that everyone can see. During the final service design stages, the service concept is likely to be refined over a series of iterations and a final blueprint can be produced. All relevant parties should be involved in this process, including the customers.

As a summary, Bitner et al. justifies the service blueprint as a practical technique for service innovation due to its simplicity and its graphical representations for all stakeholders to learn, use, and even modify, to meet a particular innovation need. The service blueprint holds the focus of a service innovation on the human-to-human and human-to-technology

interfaces, allowing service designers to drill down into the firm without losing the connection with the customer actions and processes.

3.2.2 Service Design

The Service Design is an area of knowledge aimed at improving the quality of services provided, and, this improvement is aimed at both customers and the companies that provide it.

The Copenhagen Institute of Interaction Design (2008) defined that Service Design helps to create new or improve existing services to make them more useful, usable, desirable for clients, and efficient and effective for organizations.

An important trend for the current context of the new service development is the Service Design Thinking. For Stickdorn and Schnider (2011), the service design approach refers to the process of designing rather than to its outcome. The outcome of a service design process can be rather abstract organizational structures, operation processes, service experiences and even concrete physical objects. It is a new holistic, multi-disciplinary and integrative field.

According to Stickdorn and Schnider (2011), the service design thinking has 5 main principles, such as:

1) User-centered -Services must be experienced through the customer's eyes.
2) Co-creative - All stakeholders must be included in the service design process.
3) Sequencing– The service is visualized as a sequence of interrelated actions.
4) Evidencing (physical evidence)– The intangible services must be visualized through physical artifacts.
5) Holistic- The entire environment of a service is considered.

The service design works as an interactive process that involves 4 stages, such as exploration, creation, reflection and implementation.

According to Fitzsimmons and Fitzsimmons (2008), the differentiation and distinctive features of services, including the participation of customer in the process, the simultaneity between production and consumption, perishability, intangibility and heterogeneity, justify the need to exercise extreme care in the engineering, design and management of projects.

In this regard, Bitner et al. (2008)sustains the challenge can be partially associated with the service co-production in real time by customers, employees and technological resources.

According to Patrício et al. (2012), the service design is a multidisciplinary field in rapid evolution, that involves the services science and design thinking, also including the service marketing, interaction design, operations management and information systems, in order to develop service offerings, which enable customers to co-create experiences and value.

Thus, designing service is a process that gathers competences and method stools to intentionally create and integrate systems for the interaction with the client, creating value and, consequently establish a long term relationship between the provider and the client (Evenson and Dubberly, 2010).

Additionally, the emergence of services due to the technology advances, creates new challenges and drives innovation within the services (Sandström et al., 2008). The promotion of the customer autonomy and the value changes, rely on the intensive use of knowledge because of the customer participation as an actor, whose performance has impact on overall satisfaction (Spohrer et al., 2007).

3.3 The Lead User Concept

In this section, the definition of Lead User, and the Lead User Method and research, are presented in order to achieve one of the milestones, which aims at the concept definition and the *status quo* of lead users, visioning the linkage between the lead user concept/method and MSD method.

Some Eric von Hippel's studies(1988) identified clear answers to questions regarding the source of innovation in the field of scientific instruments. The conclusion was that users were the developers of almost all the innovations he studied (77%). And, this pattern was uniformly presented in all four instruments' families studied: Gas chromatograph (GC), Nuclear magnetic resonance (NMR) spectrometer, Ultraviolet (UV) spectrophotometer and Transmission electron microscope (TEM)).

In order to measure the source of innovation, von Hippel questioned who first developed a later-commercialized scientific instrument innovation. Most manufacturer's who commercialized innovations initially developed by users, showed that 78% of the instruments commercialized display the same underlying technical operating principles as

their user prototype predecessors. This would be exceedingly unlikely to occur if users and manufacturers were engaged in parallel, but in independent research efforts.

Thus, LU research is applied in the initial phases of an innovation project to identify strong market opportunities and develop concepts for new products or services. These concepts are developed with collaboration and interaction with internal personnel and direct input from lead users(von Hippel, 1988). Involving them in the development of new products and services, can provide extremely valuable design data and cuts down the work required of development engineers (Urban and von Hippel,1988; Herstatt and von Hippel, 1992).

3.4 The Lead User Method

In the Source of Innovation (von Hippel, 1988),the motivation of studying and developing the Lead User method is centered on how can one determine user needs for new products in fields that are rapidly changing.

According to the Lead User Handbook (2009), the LU approach to the development concept differs from traditional methods in three very important aspects:

- LU research captures the rich need information possessed by leading edge users;
- LU research captures prototypes and ideas for new products and services that are developed by lead users;
- LU research accelerates the concept development.

The LU research begins with a narrow focus, and, the team is responsible for the enlargement of this focus. Some innovative outcomes are unexpected, thus the flexibility and a level of uncertainty of the real goals are necessary. The common applications of LU studies are the breakthrough of products and services, new applications, markets and business directions.

The LU method consists of some important phases as shown below:

a) The first phase consists of the selection of a multidisciplinary team to define general types of products and markets of interest. This is considered a preparatory phase and the group decides the new product or service sector that will implement the lead user study.

b) The second phase consists of the identification of trends and customer needs. Additionally, the team goes deep in the investigation of trends and emerging market needs.

The identification of trends organizes the activities and the correspondent lead users, who are facing needs for products and services that do not yet exist on the market. Therefore they cannot be considered early adopters.

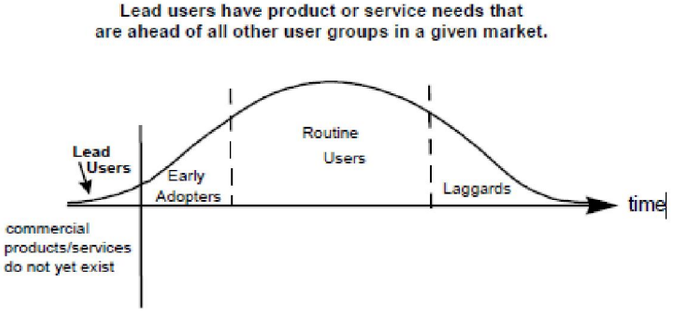


Figure1-The leading edge position of lead users, relative to other categories of users typically included in diffusion studies. Rogers, 1993, 4th edition in Lead User Project Handbook p. 7, von Hippel, 2009.

c) The third phase consists of the concept generation of the project. The project team goes to the field and observes to better understand the lead users' needs and innovative ideas.

Also according to the Lead User Handbook (2009), it is useful to think about three different categories of lead users that can provide important information for the project teams. During a LU study, team members systematically contact each type, in order to get the best information. The three types of lead users are:

1) lead users in the target application and market;
2) lead users of similar applications in advanced markets;
3) lead users with respect to important attributes of problems faced by users in the target market.

By the end of this phase, the professionals will have generated preliminary concepts and even a prototype is already possible.

d) The fourth phase consists of the concept development with lead users and technical experts. This is the moment to improve and add solutions to the concept through a

workshop, usually over a 2 or 3 day period to do the service concept development work.

3.4.1 The key success factors in the Lead User's studies

The key success factor in this type of research is much related to the team activities and profile. Below, some of them are presented:

- A skilled multidisciplinary team;
- They must have expertise in each critical area of the study;
- If the study involves identifying new markets and emerging customer needs, a marketing specialist is needed in the team. It is also valid for studies focused on strategy, which require a person who understands the business;
- It is also important to have senior managers who understand the implications of the project and assist the implementation after study.

3.5 Multilevel Service Design Method

The Service Design is an area of knowledge that brings together a set of techniques and tools(Patrício et al., 2012)and, although it is still an emerging area, people are witnessing the need for more research to integrate new methods and ways of thinking about service in the traditional development methods (Ostrom et al., 2010).

The MSD method is considered a holistic approach and an integrator(Patrício et al., 2012), which combines contributions from different disciplines. Furthermore, this method intends to, simultaneously, understand the customer experience and design the service offerings considering three hierarchical levels:

- The concept of service, considering the value constellation experience (VCE) and the customer value constellation (CVC);
- The service system, which includes the architecture and service system navigation (SSA and SSN);
- The use of the Service Experience Blueprint tool (SEB) illustrate the moment of the meeting with the service experience (service encounter).

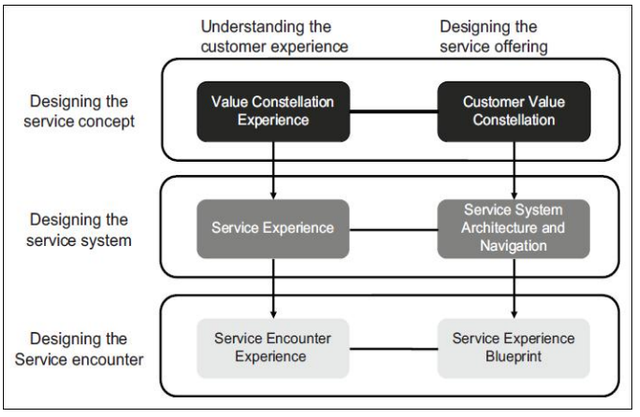


Figure2 - General model of multilevel service design (Patrício et al., 2012)

Generally, each level consists of two parts: the understanding of customer experience and prototype. Thus, the result of each phase consists of the mapping of the activities corresponding to the respective level and the design of each phase of the service offering.

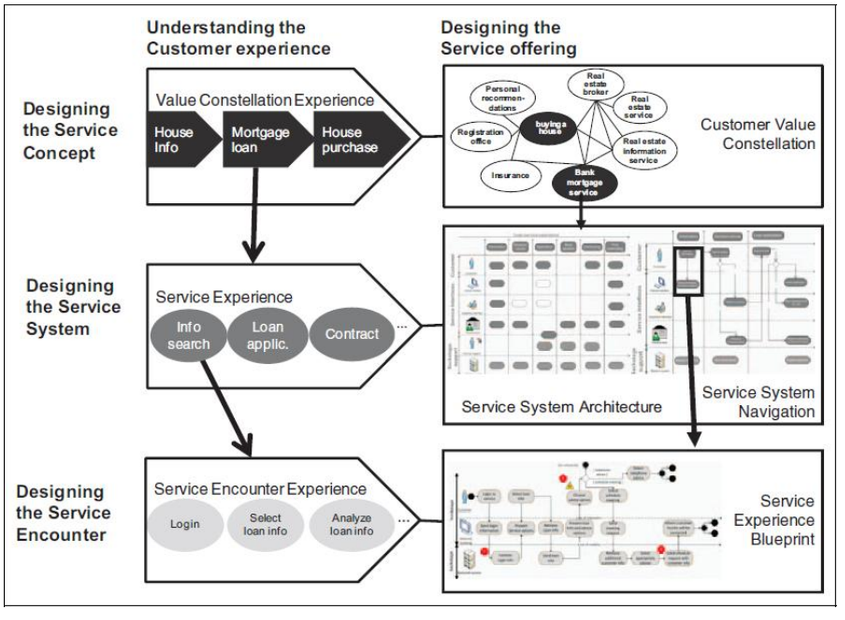


Figure3 - Component models of multilevel service design (Patrício et al., 2012)

This method starts with the study of the customer experience, allowing the use of qualitative and quantitative methods for collecting and analyzing data. After the analysis and interpretation of the results, it is possible to map the customer activity and the different

service activities, based on a deep understanding of the customer experience (Patrício et al., 2012).

This stage is followed by the design of the service concept, considering the VCE (Value Constellation Experience), which means understanding the various activities involved in the experience and in the interactions between the customer and organizations, as well as, identify most important factors of the experience. Additionally, since experience exists in a systemic context, CVC (Customer Value Constellation) is designed to better understand the set of service offerings and its interconnection with the VCE. The CVC is the level of service concept formed by an interconnected system of services, through which the customer creates value for a given activity (Patrício et al., 2012).

Secondly, down at the enterprise level (Patrício et al., 2012, Patrício et al., 2011), the design of the service system involves understanding all interactions between the customer and the service system available by the company, which leads to the achievement of one or more activities of VCE. Taking into account the various interfaces available for the same activity of the service, the SSA (Service System Architecture) and the SSN (Service System Navigation) compose interfaces that guide the customer journey to a pleasant experience.

The third phase consists of the service design detailing, related to the contact points between the customer and the service, recurring to SEB (Service Experience Blueprint) (Patrício et al., 2008), which is, as mentioned before, a method used to map the activities of the participants at the time of the service encounter, in the front-stage (visible to the customer), and in the back stage (not visible to the customer).

3.6 Existing research on Lead User concept applied to services.

Even though the limited quantity of research on LU concept applied to service reflects the limited interest devoted to service innovation in general (Stevens, 2010), many arguments are produced in favor of the use of Lead Users concepts in the new service development. The list below, presents some of them:

Table 1– Previous research applying the LU concept to services

Author	Contribution
Alam and Perry (2002) and Alam (2002, 2005)	Demonstrated that the involvement of the customers during the fuzzy front end of the development, may result into a less "fuzzy" process.
Magnusson (2003) and Matthing et Al. (2004)	Revealed that innovative ideas provided by customers involved in new service development of end user mobile phone services, delivered more value to users and were more original than those of professional developers.
von Hippel and Riggs (1996)	Applied the LU research to the field of electronic home banking. Their experiment proved to be successful from the bank managers' viewpoint. Ideas developed through this approach produced better information and new service concepts at lower costs than with traditional marketing research methods.
Morrison et Al. (2000) and Skiba and Herstatt, (2009).	Focused on the way Australian library users modified information search systems, they confirmed that a significant proportion of the users took the initiative to modify the system in order to improve the value delivered. Those modifications were seen, by systems developers, to be of commercial interest. The user innovators were found to have a leading edge status if compared with average librarians. The lead users proved to be willing to share modification for information trading reasons and making the organization of networking relevant.
Stevens (2010)	Proposed the adoption of the lead user theory to the specific case of the intangible processes and services such as banks, call centers, etc, in the purpose of improving efficiency of innovative projects.

Despite the first investigations and case studies reported positive and convergent conclusions, it must be highlighted that the methodologies to implement the LU approaches are very diverse and not adapted to specific services features or methods.

3.7 Research Questions

As a conclusion for this chapter and after all the literature review, the research questions could be built. The main research question of the study is presented below:

- How can the lead user innovation concept be relevant to new service development methods in the creation of efficient, competitive and profitable services?

The secondary questions involve the aspects related to the relevance of the innovation and service design applied to a small company. Such as:

- How can the lead user method be integrated into service design routine? Is it necessary to perform rearrangements in the proposed methods (for example, in the integration of the LU concept in the MSD approach)?
- How does one small service company build value from this new approach to innovation and service design?

4 The proposal for an integrated method to develop innovative services – The Lead Users allied to the Multilevel Service Design Method

After the presentation of the literature review and the research design in the previous chapters, the foundations and concepts acquired are, now, used to propose an integrated method combining the Lead User concept/method and the MSD method.

Firstly, methods are defined by a collection of activities performed to produce organized and coherent results. In the services and innovation areas are not different, and many methods and methodological approaches are employed in the development of new services.

According to Hevner et al.(2004), the business environment consists of people, organizations, and technology and highlights the importance of building artifacts and evaluates them in cyclic mode through analytical or empirical testing.

Based on this statement, the investigation related to the integration of LU concept/method with MSD method resides in three important pillars which support the forward steps: environment analysis, research performance and the building of a knowledge base.

Thus, to support the investigation and the practical case study conclusions, a useful artifact was built (Figure 4), in which domains and sub-domains were included, in order to implement the service designed and generate a consistent knowledge base at the same time.

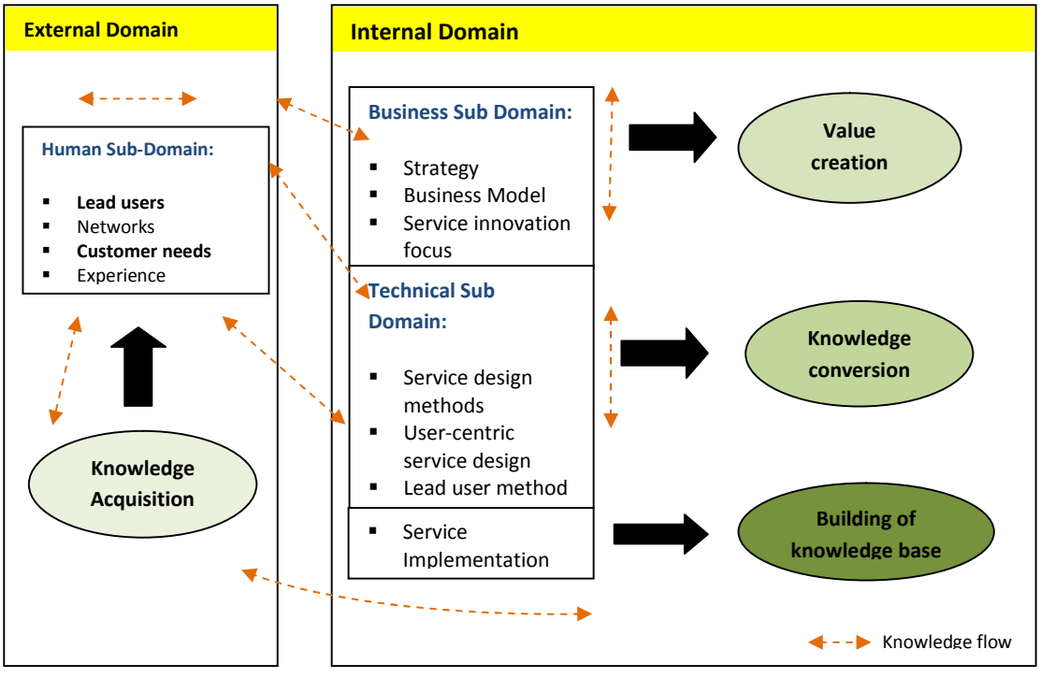


Figure 4 - Practical artifact of the integrated service design method

According to the Lead User Handbook (2009), the lead user research is done in the initial phases of an innovation project for the purposes of identifying strong market opportunities and developing concepts for new products or services. During the study, it was possible to validate this statement, because the LU method was more emphatic during the initial phases and could support the advanced phases of the service design by surrounding them with the user-centric thinking.

As a reminder, the MSD and the Lead User method phases are listed below:

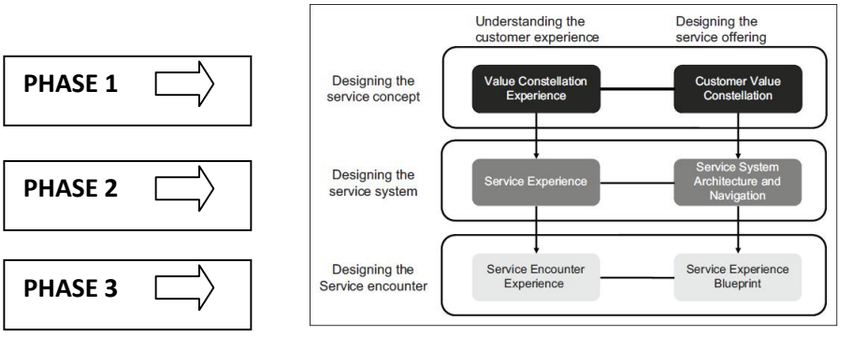


Figure 5 - MSD Phases. Adaptation of the general model of multilevel service design (Patrício et al., 2012).

Table 2 - Lead User Methods Summary

PHASE 1 Preparing the Lead User Project	▪ Spell out the focus; ▪ Selection of the project team; ▪ Develop a plan for collecting trend and market data.
PHASE 2 Identify trends and Customer Needs	▪ Deep investigation of trends and emerging market needs; ▪ Selection of specific needs related to the trend; ▪ Interview lead use experts; ▪ Framing the customer needs.
PHASE 3 Understanding the needs and solutions of lead users	▪ Acquisition of a more precise understanding of the needs; ▪ Generation of preliminary concepts.
PHASE 4 Improving solutions concepts with lead users and experts	▪ Design the specifications of the new service; ▪ Data confirming the commercial potential concepts by testing with ordinary users; ▪ Ideas for how the services will be developed and produced.

In conclusion, the integrated methods have in common the elicitation of requirements, customer needs, customer experience and the service concept generation. Although the LU method can generate prototypes and ideas concerned with the service implementation, the MSD has a more adequate approach for this function, due to the definition of the service system (architecture and navigation), as well as, the service encounter definition, including the service blueprint.

As a result of a deep analysis of the two methods and concepts, an integrated method comprised of five phases was designed taking into account the external and internal domain, the sub-domains (human, technical and business) and the knowledge flowing beyond the firm's boundaries.

4.1 Phase 1 - Preparing the service design project

This phase consists of the preparation to develop the project in sequenced tasks and build the plans related on how and what to do and by whom in each stage. This phase usually lasts three weeks.

Table 3 - Phase 1 of the integrated model proposal

PHASE 1	ACTIVITY
Preparing the project	▪ Spell out the focus; ▪ Selection of the project team; ▪ Develop a plan for collecting trend and market data and customers profiles;

According to the investigation framework of the integrated service design method (Figure 4), this initial part of the project is located in the internal domain and in the business sub-

domain, in which the value is created and the innovation concept is inserted as an intangible and even cultural asset for the project and for the company.

The first input of the phase involves the requirements related to the scope and business objectives. It means that, the focus of the project is defined by the strategic plans and goals of the company. As defined by Norman et al. (1993), seen from this perspective, strategy is primarily the art of positioning a company in the right place on the value chain, in the right business, in the right services and market segments and in the right value-adding activities.

Another important input is the selection of a multidisciplinary team to develop the project and the plans to collect data outside the company, exactly as described in the first phase of the LU method. According to the Lead User Handbook (2009),the project team is likely to include people from different departments and it will be important for key managers, from each participating department, to have direct input into decisions regarding the focus, goals and resource allocations for the project. The ideal team size is three to four people. In terms of specific skills, the combination of skills needed includes the expertise in the problem area and the ability to think creatively and openness to new approaches. The teams have, in this phase, two major activities, such as, reading in trade journals and talking with important project stakeholders to acquire a basic understanding of the current marketplace, and develop a specific plan for the intensive data collection that starts in phase 2.

4.2 Phase 2 - Identifying trends and understanding customer needs

The phase 2 of the integrated method includes the investigation of trends and emerging market needs, and the customer needs. This is the moment that the team goes outside the company to bring knowledge about the external environment, users, lead users, experts and the market trends. Notice that this phase occurs in the external domain and in the human sub-domain (according to Figure 4), where the knowledge is acquired through the interaction among users, partners, experts and even the crowd sourcing.

Table 4 - Phase 2 of the integrated model proposal

PHASE 2	ACTIVITY
Identifying trends, lead users and understanding customer needs	▪ Acquisition of a more precise understanding of the customer needs and lead users solutions; ▪ Deep investigation of trends and emerging market needs; ▪ Selection of specific needs related to the trend.

The trend investigation is a critical part of this phase. In order to identify the correct lead users to help in concept generation, the team must first arrive at a very clear statement of the future customer needs that will be addressed to potential services. The research activities are organized around interviewing top market experts and the scanning of selected trade literature, aimed at identifying major trends that will impact future market demands. Before concluding the trends and needs investigation, the team does an informal analysis of the target markets to confirm that the selected needs represent a very good commercial opportunity.(Lead User Handbook, 2009).

This phase generally lasts four weeks to investigate the customer needs, identify trends, lead users and experts. During this phase, the team shares and discusses what members are learning and consequently creates knowledge and triggers the knowledge flow between the internal and external domains. A major challenge for the team is assessing which trends are relevant to the business goals and it requires a very good understanding of the dynamics behind the trend. Which events and conditions are driving it? Who is being impacted? What is the evidence that it will have a major effect on future product or service needs? Answering these types of questions is an important aspect of the team's work during the trend investigation. (Lead User Handbook, 2009). It is important to highlight that any method of trend identification can be used, due to the flexibility of incorporating support methods to the tasks of the phase.

Also according to the Lead User Handbook (2009), to identify the best experts for the purposes of the project, it will be useful to go up "pyramid of expertise." As presented below, there are many people who know something about a field, but only a few are the best experts. The goal is to seek out and interview people who are at the very top of the pyramid with respect to the particular knowledge and insights needed. Consequently, lead users can be found during this task.

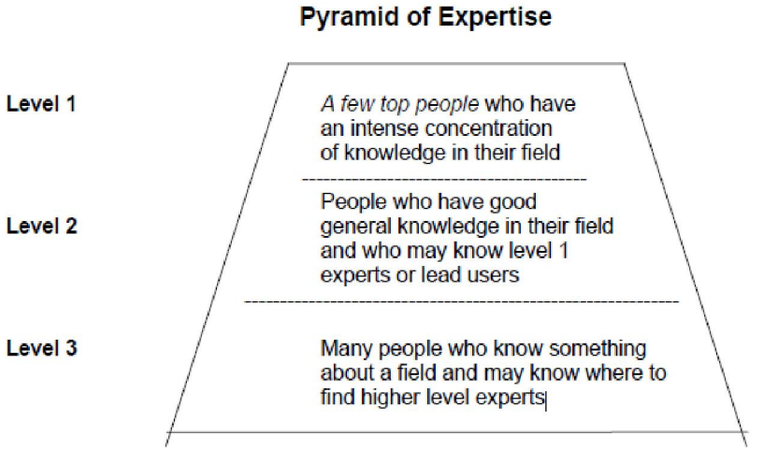


Figure 6 - The pyramid expertise structure. Lead User Handbook (2009) p. 85

Teams use a networking process (collaborative and open source networks) to identify lead user experts who are most appropriate for the goals. Networking involves contacting someone at some point on the pyramid of expertise and asking them for the names of experts who know even more. This method usually works well because people who have an interest in a given subject, tend to know others with similar interests. Also, people with significant expertise tend to be aware of others who know more than they do, because they are themselves interested in learning more.

In summary, not only experts but lead users as well, can be identified in collaborative networks on internet, social networks, specialized communities, etc. The planning of the phase 1 must define all the channels that will be used during this phase. It is recommended that the designer, at some point, to get closer to the lead user context to capture clues related to their needs and experiences.

Another crucial part of this phase is the deep understand of customer needs. Due to the flexibility of the methods, different approaches are accepted in this part to enhance the understanding of the customer needs. In order to organize this task in sequential activities, it is important to define which activities will be performed. For example: ethnography, observation, focus group, interview, data collection supported by the marketing intelligence, role-playing, etc.

Besides all these tools, the customer experience and the context that involves the entire atmosphere must be considered. In this sense approaches such as observation and role-playing allow the designer's immersion into the real customer context. These are powerful artifacts to understand what customers want, even if they are not aware of it.

The first part of the phase (trends and lead users identification) gives a preliminary idea of a general need even before the market and gives some clues about the customer experience, as the designer goes to the lead users' environment to understand the needs that took him to innovate in certain area. Thus, the other tools refine this knowledge and it is consolidated by the customer experience knowledge in different channels and contexts. One of these tools is the workshop described in the LU method. Although, it is in the final phase of the LU method, a workshop with lead users and experts may be performed in this phase. This anticipation is justified by the fact that the LU workshop prepares the ground for the service concept generation that will be performed in the next phase, which belongs to the MSD method. The addition of lead users to the value network or as a stakeholder of the project, also anticipates the designer viewing of how the new service will be co-created by the customers.

This activity is performed in a two or three-day event, in which a group of lead users and experts performs an intensive design work with the project team. The overall purpose of the workshop is to improve and add knowledge to the preliminary concepts generated in the previous phase. In this case, the focus is on developing additional new concepts, in order to ensure that the team has fully explored all the solution possibilities. (Lead User Handbook , 2009).

4.3 Phase 3 - Service concept generation

This phase is located in the internal domain and in the technical sub-domain. It is composed of the phase 1 of the MSD method (Designing the Service Concept) and part of the phase 4 of the LU method related to the deep understanding of the solutions of the lead users.

Table 5 - Phase 3 of the integrated model proposal

PHASE 3	ACTIVITY
Service concept generation	▪ The understanding of the solutions of lead users added to the value constellation experience mapping and the customer value constellation mapping.

The phase starts with the deep understanding of the solutions of lead users and the workshop conclusions, taken during the end of the previous phase, must be strongly used in this stage, due to an important value creator centered on needs and experience that the lead users represent. It is important to incorporate these preliminary to the customer value constellation (CVC) to support the design of service offering and the value constellation experience (VCE) can be enhanced by the decomposition of the lead user activities if necessary.

According to Patrício et al. (2012), this approach widens the service design space and changes the customer roles in value co-creation, changing the firm's processes of value integration, or repositioning the firm in the value constellation.

The next steps of the phase follow exactly the activities described in the phase 1 of the MSD method, defined by the comprehension of the customer experience through the decomposition of the activities in various levels at the firm domain and the design of the service offerings through the building of the customer value constellation. This phase ends with the construction of the value proposition.

4.4 Phase 4 - Designing the service experience

This phase is also located in the internal domain and in the technical sub-domain. It is comprised of the phase 2 of the MSD method (Designing the Service Concept) and is defined by the service experience modeling.

Table 6 - Phase 4 of the integrated model proposal

PHASE 4	ACTIVITY
Designing the service experience	▪ Customer journey and customer experience research. ▪ Definition of the service system structure (Service System Architecture and Navigation building).

According to Patrício et al. (2012), the service system enables customers to co-create their service experiences according to the positioning of the service concept in the value constellation. It means that various diagrams can be framed according to the touchpoint between the company and the customer, based on the previous phases, in which the innovation strongly influences the creation of value of a particular service.

This phase requires more attention to the customer journey that refers to a series of touchpoints, involving all activities and events related to the delivery of the service from the customer's perspective. This approach supports the understanding of the service experience across multiple contacts (Patrício et al., 2012). Thus, this phase consists of the representation of the customer journey across multiple channels of the service.

Also according to Patrício et al. (2012), due to the various interfaces available for the same activity, the service system architecture and the service system navigation compose interfaces that guide the customer to the best combination of a pleasant experience.

Regarding the service systems (Service System Architecture and Navigation), they consist of the systematization, in sequential frames, of the existing situations or new potential solutions (Patrício et al., 2012). It means that the complex understanding of the customers previously acquired is now being converted into tangibles artifacts that enables a visual understanding of a complex customer journey sourced by the value constellation and the customer experience.

4.5 Phase 5 - Designing the service encounter

This phase is also located in the internal domain and in the technical sub-domain. It is comprised of the phase 3 of the MSD method (Designing the Service Encounter) and part of the phase 4 of the LU method (test with ordinary customers and lead users).

Table 7 - Phase 5 of the integrated model proposal

PHASE 5	ACTIVITY
Designing the service encounter	▪ Service Encounter experience ▪ Service Experience Blueprint ▪ Prototyping - Data Confirming (test with ordinary customers and lead users)

According to Edvardsson et al. (1996) services are produced by means of process described in various ways and in a series of steps. The result is an external service to customers on the market. The whole chain of customers and company interactions must be organized and easily visualized to generate efficient services.

Understanding how customers evaluate the service processes, and how those judgments evolve, is critical. Some researchers suggest that it is the summation of all the steps, of

service encounters, within a service process that is evaluated by the customer and not just individual interactions with service providers (Bitner et al., 2008).

Firstly, the service encounter experience is co-created through customer interactions at a given service interface and task. In MSD, the customer studies enable mapping the process that customers use to co-create their experiences for each service encounter or touchpoint, and identify important experience factors (Patricio et al.,2012).

Secondly, based on the detailed understanding of the service encounter experience, the service experience blueprint maps the actions of the different participants in the service encounter, both in the front-stage and back-stage. As already mentioned in this study, the use of this tool results in the service process. In fact, during this stage, the service concept is likely to be refined over a series of iterations to the point, at which a final and comprehensive blueprint can be produced.

All the relevant parties should be involved in this process, thus, Bitner et al. (2008), organized a typical service blueprint in five components, such as:

- Customer Actions;
- Front-stage(Visible Contact Employee Actions);
- Back-stage (Invisible Contact Employee Actions);
- Support Processes;
- Physical Evidence.

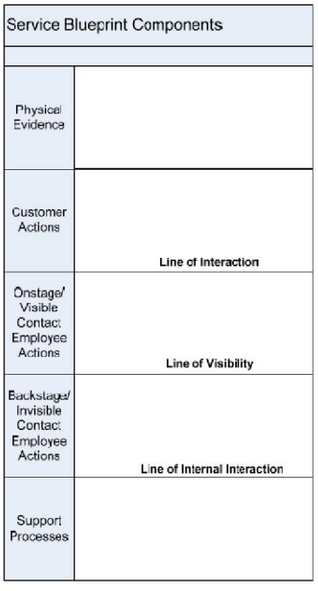


Figure 7- Service Blueprint components

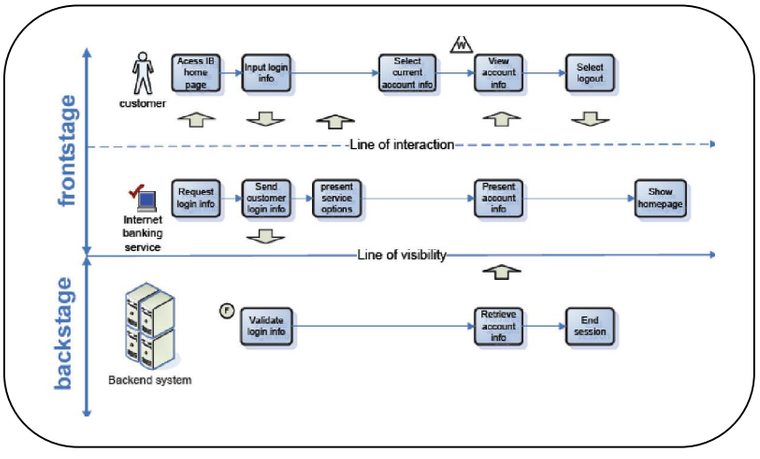


Figure 4 - Example of a Service Blueprint Diagram (Patricio et al., 2012)

The phase ends with the improvement of solution concepts with lead users and experts and testing the service with ordinary users to validate the solution with all the stakeholders involved.

Although the prototyping is recommended in all phases, this stage produces the final prototypes of the new service. In the previous steps, the prototype refines the ideas and informs any eventual project change and in the current stage, the prototype transforms the final ideas in tangible artifacts.

After the testing and implementing, the construction of the knowledge base can be concluded by documenting the learned lessons and creating categories according to each phase of the method, to organize all the acquired knowledge, including also the network used to find the lead users and customers outside the company.

A summary of the phases is presented below:

Table 8 - Phases of the integrated method proposal

PHASES	ACTIVITY	SOURCE
PHASE 1 *Preparing the project*	▪ Spell out the focus; ▪ Selection of the project team; ▪ Develop a plan for collecting trend and market data and customers profiles;	Based on the phase 1 of the LU method (Preparing the Lead User Project)
PHASE 2 *Identifying trends and understanding customer needs*	▪ Acquisition of a more precise understanding of the customer needs and lead users solutions; ▪ Deep investigation of trends and emerging market needs; ▪ Selection of specific needs related to the trend;	Based on the phase 2 of the LU method (Interview lead use experts and Framing the customer needs) and preliminary customer needs research of the MSD method.
PHASE 3 *Service concept generation*	▪ Building the value constellation experience and the customer value constellation.	Integration of part of the phase 4 of the LU method related to the deep understanding of the solutions of the lead users and the phase 1 of the MSD method (Designing the Service Concept)
PHASE 4 *Designing the service*	▪ Customer journey and customer experience research. ▪ Definition of the service system	Replication of the phase 2 of the MSD method (Designing the Service System).

experience	structure (Service System Architecture and Navigation building).	
PHASE 5 *Designing the service encounter*	▪ Service Encounter experience ▪ Service Experience Blueprint ▪ Prototyping - Data Confirming (test with ordinary customers and lead users)	Integration of the phase 3 of MSD method (Designing the service encounter) and part of the phase 4 of LU method (test with ordinary customers and lead users).

5 Case Study

This case study treats of the design process of innovative services in a small company, who aims at providing support and consult services related to the customer relationship management (CRM).

This chapter describes the company and the design process, and discusses and validates the outcomes.

5.1 The company

The company described in this case study is located in Rio de Janeiro, Brazil and operates in the field of Operation Support Systems (OSS) consulting for telecommunications providers. The company has almost five years of existence and is composed by few experts who perform different functions in the projects due to the small size of the firm.

The company started from the initiative of two computer engineers who provided consulting services and project management for big telecommunications providers. By this time, both of them worked for a big consulting company and realized that some small needs of the customers were not taking into account due to the organizational culture of the company that focused most on the technical issues and neglected some organizational aspects that should be visualized and understood during a software implementation and development projects. Due to the North American economic crisis started in 2008, the old company ended their activities in Latin America to focus on the Asian markets, thus the engineers had the idea to open a very small consulting firm to provide the missing parts of the service they could not offer before.

During five years, the company has been trying to provide a differentiated service for an already known customer. However, the competition of the big consulting firms is aggressive and the profits have been decreasing.

In 2014, predicting a crisis, the owners started some research about the market of system consulting to check how they could increase the profits. By that time, many options were relevant, however, the CRM (Customer Relationship Management) systems were a real trend that companies seemed to need. Immediately, the owners started a research to know more about this market and the conclusion taken was that big companies such as IBM, Oracle, etc.., were already providing CRM services for the telecommunication companies. Thus, they realized that maybe they were not in the right market and that they should diversify the offering of services and focus on other clients such as industries, retailers, etc.

5.2 The CRM (Customer Relationship Management)

According to Buttle (2009), information technology (IT) companies also use the term CRM to describe the software applications that automate the marketing, selling and service functions of businesses. The author also defines that *"CRM is the core business strategy that integrates internal processes and functions, and external networks, to create and deliver value to targeted customers at a profit. It is grounded on high quality customer related data and enabled by information technology."*

Most CRM initiatives expect to have impact on the costs-to-serve and revenues streams from customers. The use of technology also changes the customer's experience of transacting and communicating with a supplier. Additionally, CRM influences customer experience, and that is of fundamental strategic significance.

5.3 The Innovation Emergence

A preliminary investigation was performed to get an idea of which area represented the best commercial opportunities and the retail market stood out as a market which needed not only a system, but needed as well professionals that could help them to analyze data, in order to create effective strategies of relationship with their customers. They also kept contact with the experts, who gave important contributions related to the conceptual and technical issues. This market assessment represented an informal activity.

Additionally, the studies revealed that small clothing retailers seemed to need more support. Their structure was so small, that they could hardly explore all the functionalities of the marketing intelligence. As the competition was not there, they would take time to achieve this "gap". Due to this statement and after some additional analysis (PESTEL, SWOT, etc.), the company decided to target on the small companies to help them manage data, in order to enhance their knowledge about the operations of their firms and to improve relationship with customers.

This first step was crucial for the future development of new services, because the strategy and the target market of the business have already been defined. All the following developments were guided by these drivers.

After some months studying the competition (benchmarking), they identified two main problems related to the competitor offerings: price and customer engagement.

The conclusion of this study was that competitors could not offer services for small clothing retailers and the reasons are listed below:

- The client could hardly pay for the services because the prices charged for a small firm were almost the same for a bigger firm;
- The software and ICT structure used by the service providers companies were made in USA and the activities performed on it were based on the American CRM trends. The engagement "gap" occurred because some trends did not seem to be equal in Brazil;
- As the software and ICT structure had been acquired from famous software manufacturers, the service providers could not interfere in the system codes and even if they identified a customer need, they could only satisfy it if the standardized system architecture allowed.

As a conclusion of this preliminary market analysis, the company should provide innovative services, which push the customer to co-create value and create a strong relationship with the company. In other words, services should be created and they should be innovative, in order to keep the competition as far as possible and set a sustainable place in this market through the gain of competitive advantage.

If innovation was the solution for the company problems, the owners decided to apply some methods of service design to produce innovative services in an experimental

initiative. Based on the owners' thinking, the application of the MSD integrated to the Lead User concept was proposed and accepted. The final results aimed to complement and validate this academic study, as well as, support the company during the development of innovative services.

In the next section, the phases of the experimental project to create a new service to support small clothing retailers, in the use of data to manage their relationship with the customers, will be presented, followed by a discussion related to the results obtained.

5.4 The new service design using the methods integrated

5.4.1 Phase 1 - Preparing the project

As previously described, the focus of the project was defined due to a crisis the company faced and needed to diversify the market and the clients. It is based on the business goals established by the firm and represent the drivers that guides the project.

Table 9 - Summarized table of the business goals and some definitions

Business Goals	
Project Outcomes	• Identification of business opportunities in the long run; • Generation of at least one new service that can be brought to the market in few months.
Business Goals	The service must have profitability and support the company growth plan of 10% in the first full year on the market.
Project Constraints	The service should utilize current technologies and trends to create new services.
Definitions of the new service area	
Service Category	The company seeks to develop new services to B2B clients to optimize the customer relationship management
Target Market	• End Users: small retailers interested in the improvement of the customer relationship with their customers in customized modes according to their needs. • Other key customers: medium retailers • Possible New Markets: Small industries and small services companies
Application of Interest	The company aims to provide relevant services to support the clients' strategic and operational decisions that create a sustainable and long-last relationship with customers. Based on the market analysis and needs identified, the company must provide support and accessory.

The appendix B presents the complete table created to register the business goals and the definitions of the new service area.

The selection of the project team was very fast because of the size of company. The owners did almost the entire job, supported by some data provided by one employee that

divided the work time between the new project and the current clients and projects of the company. It was defined that 50% of the owners' work time would be dedicated to each phase equally and the employee involved would dedicate 15% of his work time to the project.

The next step was comprised of the development of a plan for collecting trends, market data and customers profiles. As a result of this stage, the current needs concerned to the reality of users, the industry experts that are doing leading edge work, the major trends and other factors that are driving current practices in their industry, were mapped.

The team consulted the major project stakeholders (users/clients) and brought together key company personnel and experts associated with the business to discuss current trends and market opportunities. This activity was mainly performed by telephone and occasionally through a visit to the stakeholder location. This task was also relevant to the client prospection activity needed to enter in a different market. In addition, the team spent time browsing through recent trade journals, recent company market surveys and other in-house market data.

The phase ended with the identification of trends based on the information they had gathered. In this part of the discussion, the team defined the impact of trends in several different fields, such as technology, product usage, demographics (appendix B).

Using the identified trends as a starting point, the team developed a list of the key types of information it wanted to collect. The outcome of this discussion was a list of high priority trends and market questions that the team intended to explore through interviews with experts. Once key information needs were identified, the team developed a specific action plan for collecting data. This planning involved developing a starting list of types of top experts to locate and interview, and creating an action plan to do electronic literature searches (appendix B).

This phase lasted 2 weeks. However, it can be extended to 4weeks if necessary.

5.4.2 Phase 2 - Identifying trends, lead users and understanding customer needs

This phase lasted 4 weeks and represented a hard work to raise information about the customer needs, detailed trends and lead users. It led them to a deep study of all the type of retailers, since the bigger ones until the smaller ones. The team counted with a big network

of collaboration and all the available information about the subject on Internet. They contacted big companies and small ones and the outcomes were important to make the first comparisons about the potential clients and to go deep in the comprehension of their needs.

The next step involved the contact with experts in some universities, who were consulted to identify some trends they consider relevant and some technical aspects related to data collection systems in the current days. Besides identifying trends, these experts indicated other experts that were more involved with the market and also led the team to specific communities on internet that discuss the current market of CRM systems, technical issues and specific needs which were not easily accessed by ordinary people. The team performed unstructured interviews with experts (system experts and market experts) (Appendix x) and several interactions on internet.

Through the contact with researchers focused on business intelligence and big data**,** the team identified some features that could be useful to build a more customized system.

The identified trends were mainly related to:

- Customized systems;
- CRM supported by a service offering;
- All-in-one systems;
- Data-driven decision making;
- SaS (software as a service) and cloud based.

The summarized table of this stage is presented in the appendix C.
Through the study with experts, the team found that some developers inserted modules to induce the user to create his own configuration and customization to extract specific data from the system. These experts represented the first lead user encountered because of the association with the customization trend, however it was the opposite of the trend related to the CRM supported by a service offering. Going deep in the lead users solutions helped to clarify these points.

The following step consisted in understanding the basic customer needs. It was divided in two stages. The first stage involved a survey to get data from a larger number of retailers through the social networks of the retailers associations in Rio de Janeiro. The survey represented the first overview about the retailers and their level of involvement with the customer relationship management. It was performed in 3 days (see appendix A).

The second stage involved a short interview, asking “What would you expect from a service to help on the CRM and data analysis? ”, targeted to some of the firms contacted during the prospection activities (around 30 firms, which represented a more specific sample if compared to the survey sample). It was registered all the relevant outcomes they could expect from a service to help them. The main statements were used to identify some needs as shown below (table 10). The summarized table containing the main interview results is presented on the appendix D.

Table 10 - Outcomes identification Statement x Need

Statement	Needs
“Time and Labor savings”	Automation
“Warn for the period of data validity”	Consulting in 24/7 and mobility
"I would like to have an application and a service which decide and analyze data for me. I do not want to control the whole process."	The service company controls the whole process
“I would like to have a system that enables me to check how much I sell in one day, who and what the customer bought and where, all in one system”.	All-in-one-system
“Assistance with the analysis”	Personal consulting
“A CRM should help me to take a customized action for each patient, based on his diagnose and concern about oral health”	Customized functionalities

To go deep into the raising of customer needs, observations were performed. This activity was structured according to the interview analysis. The sample selected was based on the level of retailers’ interest in the generic description of a new CRM service to support them. The team focused on the experiments with observation towards the work practices of six firms after signing a formal statement of confidentiality, imposed by the service providers to set a trustable relation between them. To obtain a true understanding of their experience with their system and the use of data to manage the customer relationships, the team observed them in their daily routines at their office (appendix E).

The observations posed a great deal of questions and conclusions. For example, it revealed an extra activity of one of the clients that used a “homemade” report to get information about customers and took decisions based on it. He opted to generate a report by extracting the raw data directly from the automated payment system quickly and simple to read. Thus, the observation allowed the team to find a possible lead user. The report satisfied his need because it enabled him to have a ready analysis on his hands, and take the decision of communicating with the customer through the most adequate channel to each customer. Nevertheless, the team found that this report enabled just a few outcomes and technically it

was very basic, therefore, the client still needed to push the customers to engage even more. As a result, it represented a potential need of the market and should be investigated.

In order to better understand the solutions, the team asked these potential lead users (experts and clients. See appendix F) to write down all activities and functions in detail. After that, a mini workshop was performed in two days, in which 3 clients (supervisor, manager and owner of the same firm) and 5 system experts generated some preliminary concepts.

The workshop generated the following preliminary concept:

A flexible platform, which extracts data directly from the clients' automated systems:
• The platform should enable the integration of features and modules according to the clients needs. • The company should create a portfolio of services offerings based on the set of customizations the platform permits.

Going deep into these issues, the team found they could study some options to use a software previously developed by the owners to support the OSS consulting to fit modules based on these trends. Based on it, an evaluation of the existing system was performed and it pointed this possibility due to its flexible architecture. The team concluded that the transformation of the software into a platform was possible, however, to enable customizations for different type of retailers (ex: grocery, drugstore, etc), the current infrastructure should be enlarged because of the simultaneous processing routines in distinct modules. It would require a high investment for the company in that moment and they decided to initially develop a service aiming the clothing retailers and the enlargement of the service for the others types of retailers would be planned for the future according to the company's business plan and goals.

In conclusion, this phase ended after identifying tools used informally to complement some needs and concepts, which was related to the trends previously identified. It represented that the lead users type 1 (lead users in the target application and market) and type 2(lead users of similar applications in advanced markets) were found, the main needs were identified and the preliminary concepts were generated. The next step was based on these conclusions to define the service concepts.

5.4.3 Phase 3 - Service concept generation

This phase consists mainly in understanding the customer experience to generate the definitive service concept.

Customer experience refers to what the customers feel during the interaction with the service provider across different touch points. The framework that can be used for this modeling is the Customer Experience Requirements (CER, Teixeira et al., 2012),included in Customer Experience Modeling (CEM) to engage the customer based on the experience, as shown below:

Table 11 - CER table

Usability	Easy to plan the activities using customizations;
Reliability	The service helps improving the communication with customers;
Engagement	Small retailers could use the service as a need to be in the market;
Content	Availability of the team to support the client during the journey;
Speed	The fastness to get the information, analyze it and make decisions;
Flexibility	The ability to customize data collection based on what the client needs

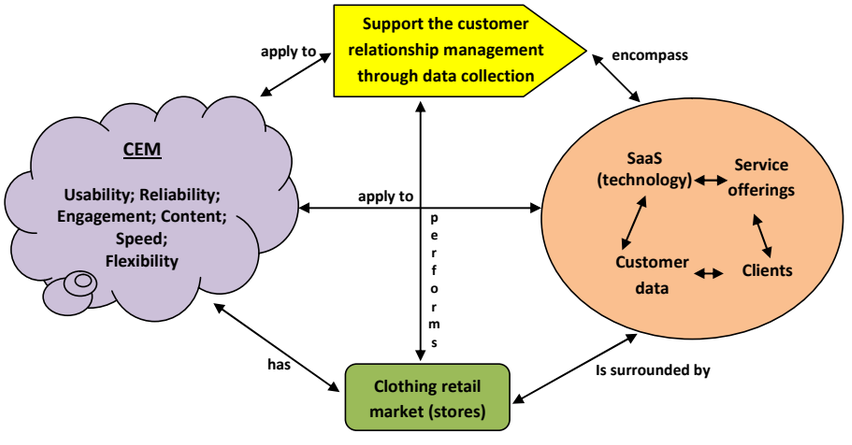


Figure 5 - Concepts and CEM relations (Teixeira et al., 2012)

As it turns out, for the activity of managing the customer relationship, the CEM is used as an initial approach and complementary to MSD method that will provide additional information and understanding for the design of services.

The following step was the VCE (Value Constellation Experience), in which a list of main activities was depicted (Figure10).

Figure10- VCE for the services offerings

Regarding the CVC (Customer Value Constellation) (appendix G), the contextual elements involved in the activities consist of actors, system actors, and artifacts. The actors consist of clients (retailers) as main customers to get the support service. The system actors consist of the company's new platform which provides the support services and internet cloud-based, as connection in order to access the services. The supporting artifacts consist of customized plans, reports, etc.,

In conclusion, the CVC was used to show the whole service concept and is focused on the main needs of the customer, thus it was possible to specify the service offerings for each category of the service (planning, collecting, reporting and supporting):

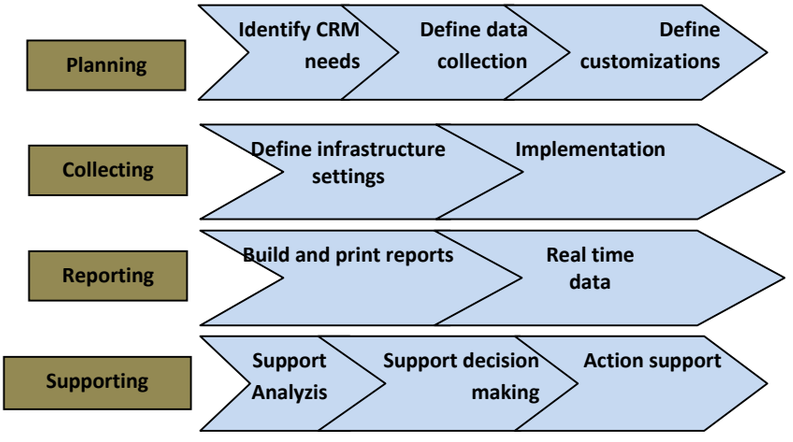


Figure 11 - List of categorized services and respective activities

This phase ends with the service concept which consists in a service of CRM support, which collects data, generates relevant reports, helps the client to make decisions and structures their actions through the data analysis.

All the services are supported by a modular system, developed by the company, which collects data and enables the client to know their customers under various approaches and even internal information about operations (sellers' results, branches characteristics, etc).

Through the development of the CVC, the company standardized some routines, which enabled the client to buy a set of benefits (table 12). Differently from the others, the service company collects data, in real time, directly from the automation system, analyzes it according to the parameters and customizations, and delivers conclusions and results for the client. The company also offers support to make decisions and to act (email marketing, campaigns, etc).

Table 12 - Example of a set of benefits customized for a client

Data cleansing	Adjustment and enrichment of the customer data. This activity enables an efficient collection and must be part of the initial planning.
Sales Position	Measurement of the performance of each store in registering and identifying clients and sales.
Segmentation	Identification of targets (groups of customers) in accordance with the relationship records of each customer with the brand.
Relationship	Create a positive customer perception towards the brand (brand awareness) mainly through the communication conditioned to key events (birthdays messages, welcome messages, etc.) .
Email sending	Includes preparation and mailing shooting
Measurements	Measurement of results in sales for each campaign
Consulting	Support to analyze results and plan the next relationship actions

5.4.4 Phase 4 - Designing the service experience

Based on the customer needs study, the customer journey could be developed to show clients in the activities during the whole process. This process is presented below:

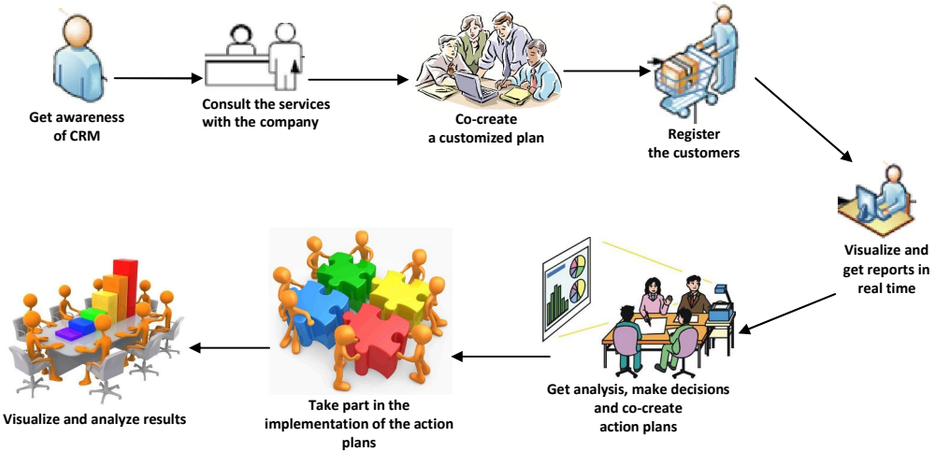


Figure12 - Customer journey of clients (clothing retailers)

After this general mapping, the customer journey could be better understood through the service system structure (Service System Architecture and Navigation building) (appendix I.).

This stage permitted to visualize for the first time, what is physically perceived by the customer and what is not.

The team decided to create two personas (appendix H), in order to have a clear idea of the customer behavior, perceptions and tasks performed during this process, which could not be experimented until now. The conclusion taken from these activities was important to input some complementary services to enhance the quality of data and deliver reliable information as much as possible. This stage was crucial to understand how engaged the clients would be during the journey.

5.4.5 Phase 5 - Designing the service encounter

This phase starts with the design of the service delivery or service encounter. It defined the level of interaction and visibility of service under the client's view. Additionally, as part of the service concept, the interaction and delivery of the service use personal contact and a dashboard visualization on internet. The real line of interaction during the delivery could be well visualized at this stage through the service blueprints. The service blueprints of the planning and supporting phases are presented in the appendix J.

This phase ends with the final prototyping presentation, when some tests were performed with the potential customers that were interested in the service after a first prospection, including the lead user.

During these tests, an important routine was included in the service offering, related to monthly meetings with the client's (supervisors, managers, sellers, marketing specialist, etc), who are directly involved in the decision making and the accomplishment of tasks to improve and maintain an efficient relationship with their customers. Through the meetings, the company co-creates value with the client and can identify needs that guide them to an innovation cycle, which is sustained while the service is active.

5.5 Results validation and discussion

Although the method and concepts were experimental and lasted almost four months, the case study validated the theory presented in this dissertation and guided to additional reflections involving innovation and efficient service design.

As expected, the implementation of a service design method integrated to the Lead User concept, represented a hard work in the beginning because of the build of a culture based on the "innovation thinking". Consequently, this thinking naturally influenced the advanced stages, mainly the service blueprint and the system prototype.

One remarkable success factor of this experiment was the openness and disposition of the company (service provider) owners to implement a differentiated method of service design, even being aware of the risk it represented for company current status. It means that the experiment was successful because the owners considered innovation a real factor to succeed.

In the very beginning of the dissertation, some other small companies were probed to perform the case study, but none of them showed potential to innovate and to implement a culture focus on it. Although they seemed to be interested in new technologies and methods, they were not available to really innovate and only replicated trends, without taking into account their current context. Regarding the knowledge, it was identified that the service provider innovation potential was also composed of learning and knowledge sharing, which support the cycle of innovation while the service exists, in order to create new services and mainly improve the existing ones. A good example could be visualized in the phase 5, when the designers realized that this cycle of innovation could be tangible through the monthly meetings,, in which both client and service provider co-create value, learn, share knowledge and interact, aiming to solve daily problems and innovate.

As concluded during the phase 4, in the beginning, the client (retailers) needs all the support with the CRM, due to his lack of knowledge about how to communicate with his customers. However, as time goes by, it is intended that they be able to push the providers to new insights about CRM and some new services can be created to attend them.

As presented below (Figure 13), it is expected that the co-creation of value, innovation and knowledge atmosphere reaches maturity in three months after the service implementation, when the client can visualize the operations related to selling and recording customer data,

the relationship outcomes in numbers and consequently, some efficient decisions are made to create a sustainable relationship management with customer. It is also expected to create an additional source of innovation pushed by the client, besides the lead user contribution. Based on it, the knowledge flows between internal and external environment, creating a cycle of innovation and collaboration.

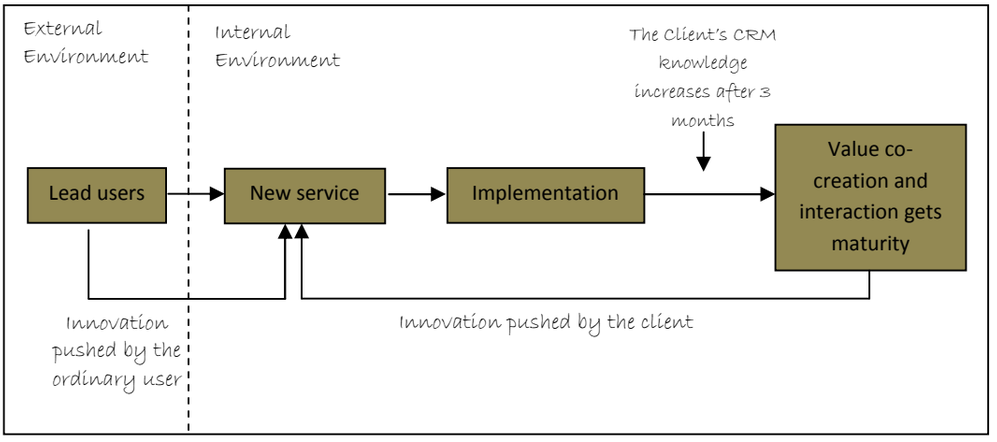


Figure 13 - Innovation cycle enabled by the client's maturity related to CRM

The unsuccessful factors could be represented by the short time to implement the service, which lasted four months and was considered a risk to the effectiveness of the service design and a risk to the dissertation theory validation. However, these risks were previously mapped during the phase 1 and it could be minimized, after some actions related to a technique of schedule building inherited from the project management methods. Although the project was successful, it is recommended the minimal of six months to implement and get the first results analysis, in order to plan the next steps efficiently.

The business plan was built based on the benchmarking, customer needs and a business model that prioritizes the saving on operational costs, due to an own platform based on the modules, which enables the customization. Additionally, a huge intellectual capital is supposed to support the client in their crucial aspects related to the customer relationship. The business model canvas (Osterwalder, 2010) helped to visualize these concepts and is depicted on appendix K.

As the experiment succeeded, the company decided to adopt the new service officially. During the phases' performance, a prospection service was done to acquire new clients

interested in testing the service and currently, the company counts with five small clothing retailers as early adopters of the new service.

6. Conclusions

As a conclusion for this study, the research questions could be answered and the theory could be validated in a real situation. The main question (How can the lead user innovation concept be relevant to the new service development methods in the creation of efficient, competitive and profitable services? was naturally answered because the company could push themselves to innovate guided by the lead users, who aggregated knowledge and enabled the building of a sustainable source of innovation. The lead user solution was gathered and integrated to an existing platform and launched a completely new concept of service, which disintermediated the provision of CRM services and saved operational costs by using an own system. Additionally, during the case study, the service design method (MSD) gained a complementary approach sustained by the user innovation, which supported the creation of a sustainable cycle of innovation and knowledge flow during the service provision.

The first secondary question (How can the lead user method be integrated into a service design routine? Is it necessary to perform rearrangements in the proposed methods (for example, in the integration of the LU concept in the MSD approach?) could be answered due to the flexibility of both methods, which enabled a logical and sequenced activities, where each step are dependable from the previous one, at the same time new approaches are acceptable to take part in service design process to complement the main concepts. For example, in the phase 3, the Customer Experience Modeling (CEM) was a complementary method integrated to MSD and Lead User Method to enhance the service concept generation.

Notice that all the three methods based their concepts on the customer needs and requirements identification. Thus, according to the case study, the integration among different methods was possible because they presented, at least, one similar concept, that created a strong connection among them, and consequently generated a very flexible method, which considered all the remarkable characteristics of each one.

The second secondary question (How does a small service company build value from this new approach to innovation and service design?), could be visualized by the fact that the studied company (the service provider) presented a culture focused on innovation, experimentation, collaboration and knowledge creation. Thus, they were able to build value firstly through the movement of going outside to the external environment and come back inside with knowledge and new ideas, and secondly due to the lead user, which gave a tangible idea of how the value should be built based on the private user value.

In this sense the investigation artifact (Figure 4) were validated because a relevant business need enabled the development of experiments (case study and evaluation) through a knowledge base (theories, methodologies, etc) to generate a cyclic and unlimited knowledge flow which has potential to bring relevant benefits for the research field and the market.

6.1 Future works

Results from this study provide an initial insight of how the Lead User theory can be associated to the new service development methods and the required preliminary stages, before engaging in a more elaborated service design thinking.

The positive feedback of the company regarding the integrated model, led to its implementation, despite there are some practical aspects to be improved such as the knowledge data base structure.

In long-term, the company considers the application of such service to other industries and to do that, they should study the needs of the new clients and industries. In this sense, a culture, in which the customer needs knowledge and user-centered service methods must be naturally adopted by the designers in their creative process.

In addition, through this successful experience, the service provider intends to get more maturity in service design and innovation, in order to improve the existing services and condition the new service development to the application of service design methods.

The service was recently implemented in five clients and the first evaluation will occur between September 2015 and December 2015. The evaluation of results will define the plans of growth for 2016.

Regarding the academic research, the current study was limited to the case study performed in a specific market, however it should be applied to a wider number of industries, aiming to try to contribute even more with the service innovation studies.

References

Alam, I.(2002). "An exploratory investigation of user involvement in new service development", Journal of the Academy of Marketing Science, Vol 30, n°3, pp 250-261.

Alam, I. , Perry, C.(2002). "A customer oriented new service development process, Journal of Service Marketing", Vol 16, n°6, pp 515-534.

Bitner, M., Ostrom A., Morgan, F.(2008), "Service Blueprinting: A Practical Technique for Service Innovation", California Management Review, Vol. 50, issue 3, pp 66-94.

Buttle, F.(2009), "Customer Relationship Management - Concepts and Technologies", 2nd ed.,Elsevier Linacre House, Burlington,USA.

Chesbrough, Henry W.(2006). "Open Innovation-Researching a New Paradigm". Oxford University Press, New York, USA

Chesbrough, Henry W.(2011). "Open Services Innovation: Rethinking Your Business to Grow and Compete in a New Era". Jossey-Bass -A Wiley Imprint, San Francisco, USA.

Christensen, Clayton M.(1997). "The Innovator's Dilemma, When New Technologies Cause Great Firms to Fail", 1st ed., Harvard Business School Press,Boston, USA.

den Hertog, P. (2000), "Knowledge-intensive business services as co-producers of innovation".International Journal of Innovation Management, Vol 4, Issue 04, pp. 491-528.

Druker, P.(1985). "Innovation and Entrepreneurship: Practice and Principles". Harper & Row, New York, USA.

Edvardsson, B.; Olsson, J. (1996). "Key concepts for New Service Development",The Service Industries Journal, Vol 16, issue 2, pp. 140.

Evenson, S., & Dubberly, H.(2010), "Designing for service: Creating an experience advantage", in: G. Salvendy & W. Karwowski (Eds.), Introduction to service engineering, pp 403-413. John Wiley & Sons, New Jersey, USA.

Fitzsimmons J.A., Fitzsimmons, M.J.(2008)."Service Management: Operations, Strategy, and Information Technology", 6th ed. McGraw Hill/Irwin, New York, USA.

Herstatt, Cornelius, von Hippel, Eric(1992), "From Experience: Developing New Product Concepts Via the Lead User Method: A Case Study in a "Low Tech" Field", Journal of Product Innovation Management, issue 9, pp 213-221.

Hevner, A., March, S., Park, J., and Ram, S.(2004). "Design Science in Information Systems Research". MIS Quarterly, Vol 28, issue 1, pp. 75-105.

Howell, K. E.(2013),"Introduction to the Philosophy of Methodology", 1st ed. Sage Publications, London, UK.

Johnson, Steve.(2010). "Where the good ideas come from:The natural history of innovation". 1sted. RiverHead Books, New York, USA.

Lovelock, Christopher H., Wright, Lauren K (1999)."Principles of Services Marketing and Management". Prentice Hall, New York, USA

Lovelock, Christopher H., Wirtz, Jochen (2010). "Services Marketing: People, Technology", Strategy. Prentice Hall, New York, USA

Miles, I., (1993). "Services in the new industrial economy", Futures (Special Issue:The Future of Industrialization) , Vol 25, issue 6, pp 611-735.

Miles, I., (2001). "Service Innovation: A reconfiguration of Innovation Studies",Conference: Innovation in the Knowledge Economy, Vol. PREST Discission Paper DP01-05, University of Manchester.

Magnusson, P.R., Matthing, J., Kristensson, P.(2003). "Managing User involvement in Service Innovation", Journal of Service Research, Vol 6, n°2, pp 111-124.

Matthing, J., Sanden, B., Edvardsson, B.(2004). "New service development: learning from and with customers",International Journal of Service Industry Management, Vol 15, issue 5, pp 479-498.

Morrison, P.D., Roberts, J.H., Von Hippel, E., (2000), "Determinants of user innovation and innovation sharing in a local market",Management Science, Vol 46, issue 12, pp 1513-1527

Nonaka, Ikujiro, Konno, Noboru.(1998). "The concept of "ba": Building a foundation for knowledge creation".California Management Review, Vol 40, issue 3, pp 40-54.

Nonaka, Toyama, Ikujiro, Ryoko.(2003). "Knowledge-creating theory revisited: knowledge creation as a synthesizing process".Knowledge Management Research & Practice Vol 1, pp 2–10.

Normann, R., Ramírez, R.(1993)."Designing Interactive Strategy".Harvard Business Review. July-August issue.

Osterwalder, A.(2010). "Business Model Generation", John Wiley & Sons, Inc., New Jersey,USA.

Ostrom A.L., Bitner M.J., Brown S.W., Burkhard K.A., Goul M., Smith-Daniels V., Demirkan H., & Rabinovich, E.(2010), "Moving Forward and Making a Difference: Research Priorities for the Science of Service", Journal of Service Research, Vol 13, issue 1, pp 4–36.

Patrício, L. & Fisk, R. P.(2012), "Creating new Services", in: Fisk, R. P., Russell-Bennett, R. & Harris, L. C. (eds.), Serving Customers: Global Services Marketing Perspectives, Tilde University Press.

Patrício, L., Fisk, R. P., Falcão e Cunha, J. & Constantine, L.(2011), "Multilevel Service Design: From Customer Value Constellation to Service Experience Blueprinting", Journal of Service Research, issue 14, pp 180-200.

Patrício, L., Falcão e Cunha, J. & Fisk, R. P.(2008), "Designing Multi-Interface Service Experiences: The Service Experience Blueprint", Journal of Service Research, issue 10, pp 318-334.

Sapsford, R., Jupp V.,(2006), "Data Collection and Analysis".2nd ed., Sage Publications, New Delhi, India.

Sandström, S., Edvardsson, B., Kristensson, P., & Magnusson, P.(2008), "Value in use through service experience", Managing Service Quality, Vol 18, issue 2, pp 112-126.

Shaffer, D. & Serlin, R. C.(2004), "What good are statistics that don't generalize?"Educational Researcher, Vol. 33, nº 9, pp 14-25.

Schumpeter, Joseph A. (1976), "Capitalism, Socialism & Democracy, 5th ed., Routlegde, London, UK

Skiba, F., Herstatt, C.(2009), "Users as sources of radical service innovations: opportunities from collaboration with service lead users", International Journal of Service Technology and Management, Vol 12, issue 3, pp 317-337.

Spohrer, J., Maglio, P., Bailey, J. & Gruhl, D.(2007). "Steps Toward a Science of Service Systems". IBM Alamden Research Center, Vol 40, issue 1, pp 71-77.

Stevens, Eric (2010). "Lead User's theory adapted to services: Towards Service User's Toolkit". ISPIM, France, pp 110.

Stickdorn, M., Schneider, J. and the co-authors.(2011),1st ed.,"This is service design thinking". BIS Publishers, Amsterdam, Nl.

Teixeira J., Patrício L., Nunes N. J. , Nóbrega L, Fisk R. P & Constantine L. (2012), "Customer experience modeling: from customer experience to service design", Journal of Service Management, Vol. 23, Issue 3, pp. 362 – 376.

Urban, Glen L., von Hippel, Eric(1988), "Lead User Analyses for the Development of New Industrial Products". Management Science, Vol 34, issue 5, pp 569-82.

Vanhaverbeke,W.(2005). “The Interorganizational Context of Open Innovation”, in: Open Innovation Researching a New Paradigm (chapter 10). Oxford University Press (2006), New York, USA.

von Hippel, Eric.(1988). “The Source of Innovation”.Oxford University Press, New York, USA.

von Hippel, Eric, Riggs, William. (1996). “A Lead User Study of Electronic Home Banking Services: Lessons from the Learning Curve”.MIT- Massachussets WP # 3911-96.

von Hippel, Eric, Churchill, Joan, Sonnack, Mary.(2009). *Lead User Project Handbook: A practical guide for lead user project teams*, *https://evhippel.files.wordpress.com/2013/08/lead-user-project-handbook-full- version.pdf*

Yin, Robert K.,(2003). “Case Study Research: design and methods”. 5th ed., Sage Publications. California, USA.

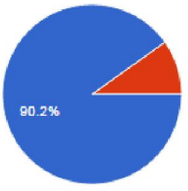
http://www.mdic.gov.br/sitio/interna/interna.php?area=4&menu=4485, Ministério do Desenvolvimento, Indústria e Comércio Exterior.Last Consult in April,5th 2015.

ftp://ftp.ibge.gov.br/Comercio_e_Servicos/Pesquisa_Anual_de_Servicos/pas2010/pas2010.pdf , Instituto Brasileiro de Geografia e Estatística. Last Consult in April, 5th 2015.

Appendix A: Survey

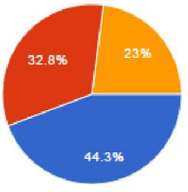
Performed between 1st April and 3th April 2015 in the facebook page of the Association of Commerce of Rio de Janeiro.

1) The size of your company is classified as:



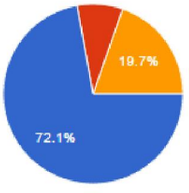
small	55	90.2%
medium	6	9.8%
big	0	0%

2) How long have you been in the market?



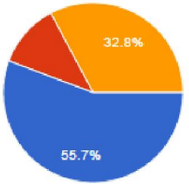
1-3 years	27	44.3%
3-5 years	20	32.8%
More than 5 years	14	23%

3) In what type of market your company is inserted?



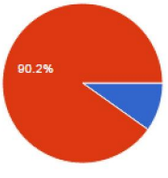
Retail	44	72.1%
Manufacturing	5	8.2%
Services	12	19.7%

4) Do you know what is CRM?



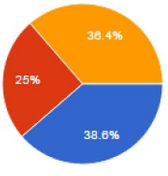
Yes	34	55.7%
No	7	11.5%
I have a generic idea	20	32.8%

5) Do you already manage the relationship with your customers?

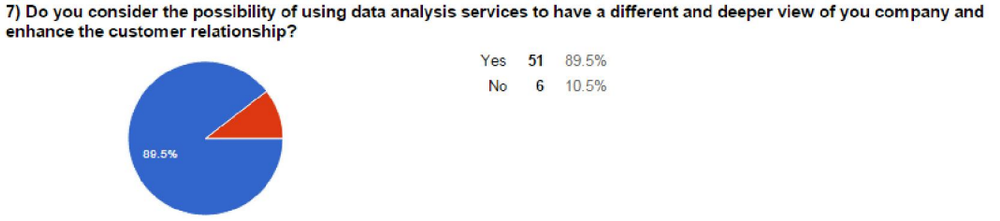


Yes	6	9.8%
No	55	90.2%

6) If your answered no in the question above, why not?



The company does not have enough budget	17	30.9%
The company does not have a team to manage it	11	20%
Other reasons	16	29.1%



Through this survey it was possible to conclude:

- The great majority of small companies knows what CRM is and its importance,
- They do not adopt it mainly because of the lack of budget and operational costs related to this type of activity.
- The younger companies seem to be more opened to a CRM service offering than the older ones.

Appendix B: Business goals, stakeholders, targets and starting trends identification

Business Goals		
Project Outcomes	• Identification of business opportunities in the long run; • Generation of at least one new service that can be brought to the market in few months.	
Business Goals	The service must have profitability and support the company growth plan of 10% in the first full year on the market.	
Project Constraints	The service should utilize current technologies and trends to create new services.	
Definitions of the new service area		
Service Category	The company seeks to develop new services to B2B clients to optimize the customer relationship management	
Target Market	• End Users: small retailers interested in the improvement of the customer relationship with their customers in customized modes according to their needs. • Other key customers: medium retailers • Possible New Markets: Small industries and small services companies	
Application of Interest	The company aims to provide relevant services to support the clients' strategic and operational decisions that create a sustainable and long-last relationship with customers. Based on the market analysis and needs identified, the company must provide support and accessory.	
Stakeholders and trends identification		
Target Users	Small retailers interested in the improvement of the customer relationship with their customers in customized modes.	
Key Stakeholders	System developers, experts, target users, owners of stores.	
Markets to be explored	Clients located in big cities like Sao Paulo and Belo Horizonte.	
Assumptions about trends		**What is needed to learn?**
Product Usage	Concern with the creation of value through a long-last relationship with customers	What small retailers is current doing to engage their customers?

Demographics	Rapidly growing of small companies interested in the customer relationship management.	What small retailers are current doing to communicate with their customers?
Technology	• Movement toward the customization and mobility of the CRM system functionalities; • The most used CRM systems neglects specific needs of small companies.	• What the current CRM systems offers and what are the needs these systems do not satisfy? • What type of new features can be applied on the current CRM systems?

Note: Basic framework based on the tables (examples) depicted in the Lead User Handbook, 2009 p. 53, 54 and 57.

Appendix C: Starting trends outcomes

Starting List Summary	
Interviewees	• Top experts in systems and data collection related to big data and business intelligence • Top experts in CRM systems and data collection related to big data and business intelligence • Marketing Relationship experts
Main Questions	What do you do? Who do you know? What do you think are *the most important trends* that will shape the future of systems/relationship marketing/data collection? What *applications* are at the leading edge of the trends? Who are the *top* experts in the areas we have discussed?
Intermediary Results	A broad list of experts and potential lead users, network building.
Actions	Analysis and meetings with the team to gather information and select the major trends.
Main Results	*Identified trends:* • Customized systems; • CRM supported by a service offering; • all-in-one systems**;** • data-driven decision making; *Lead user identification in this stage:* • Experts in big data and business intelligence, who created alternative features to enhance the data collection.

Appendix D: Short Interview – Main results

Main Question :"What would you expect from a service to help on the CRM and data analysis? ",				
Company	**Business Focus**	**Size of the company**	**Use of data to perform CRM ?**	**Report**
A	Retail (young wear)	Small	No	"Faster campaigns"
B	Retail (men wear)	Small	No	"I do not think we need a system. We know our customers"
C	Retail (women wear)	Small	No	"I would like to have an application which decides for me. I do not want to control the whole process."
D	Retail (sport outfits)	Medium	yes	"I would like to have a system that enables me to check how much I sell in one day, who and what the customer bought and where, all in one system".
E	Retail (women wear)	Small	Yes	"Assistance with the analysis"
F	Retail (kids wear)	Small	Yes	"I don't care about the system. I want to have a ready report to be analyzed."

Note: Before performing the main question, some data about business focus, company size and if the firm used data to perform CRM were collected only to contextualize the sample.

Appendix E: Observation Activity

Observation method description				
CONTEXT	**GOAL**	**SAMPLE**	**DATA COLLECTED**	**NEEDS IDENTIFYIED**
During 2 consecutive days in company A, a fast observation was done at a clothing store.	• Know the staff daily interaction with the customer. • Know the real functionalities of the selling team	• 3 sellers in the front-stage • 1 manager in the backstage • The owner	• The marketing team is not focused on customer the relationship with customer. • The firm ICT is also used to check specific parameters concerned to emails sent to customers with promotions	Engage the client to incentive him to use data to communicate with customers and be more aware of the company.

CONTEXT	GOAL	SAMPLE	DATA COLLECTED	NEEDS IDENTIFYIED
During 4 consecutive days in company B.	• Check the IT team daily routine. • Check how the team deals with the marketing intelligence. • Check how the company is communicating with the customers (which channels they are using and how they reach the customer)	• IT Department (2 assistants) • 1 manager • Marketing Department (2 specialists)	• Analysis performance takes around 4 day to "manually" be done. • Actions and campaign decisions are based in 30% of the firm's data. • This informal data collection identified is inefficient due to the lack of defined processes to collect and analyze data. • The staff does not feel comfortable in analyzing data and they are very intuitive when they have to make decisions.	• Request for more personalized system to attend their needs; • Need for data in all-one-system; • Inefficient process to collect data. As consequence, the data loses validity, affecting the actions and campaigns.

CONTEXT	GOAL	SAMPLE	DATA COLLECTED	NEEDS IDENTIFYIED
During 5 consecutive days in company E.	• Know the staff daily interaction with the customer. • Know the real functionalities of the selling team system.	• 2 sellers in the front-stage • 1 manager in the backstage • 1 manager assistant	• The reason the marketing do not use marketing intelligence data is because they have to check in several other data source to get relevant data in real time about their customers and the team is always busy with other activities; • **Important customers' and sellers' data is extracted directly from the automated system;** • The data extracted is not organized and selected and it is not consistent enough to perform an efficient CRM; • The staff does not feel comfortable in controlling the whole process (planning, collecting, analyzing, reporting and acting).	A more personalized system to attend their needs; Service offerings to deal with the marketing intelligence data that could be useful to make decisions

SPECIAL NOTE:A lead user was identified during the observation sections (extraction of necessary data through a more flexible and efficient task).

Note: Although 6 firms were observed, the 3 main observation outcomes were reported above.

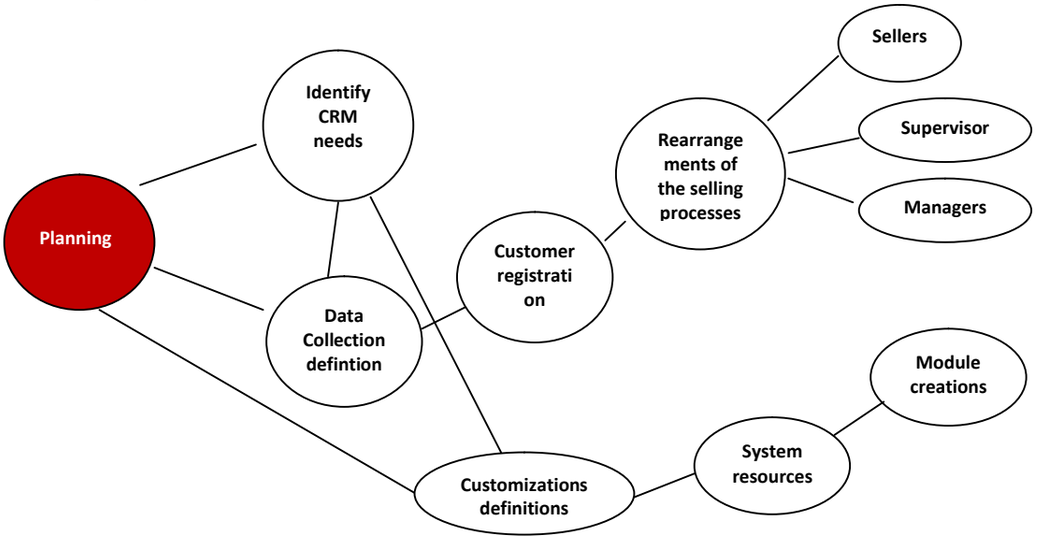
Appendix F:Lead User Conclusions

Lead User A	A potential customer who extracted important customers' and sellers' data directly from the automated system without using any service or CRM system.
Lead Users B	A set of experts who developed modules to complement data collection system to business intelligence analysis.

Appendix G: CVC to the activity "Provide data services for CRM" defines four main activities: planning, collecting, reporting, supporting.

The planning activity includes:

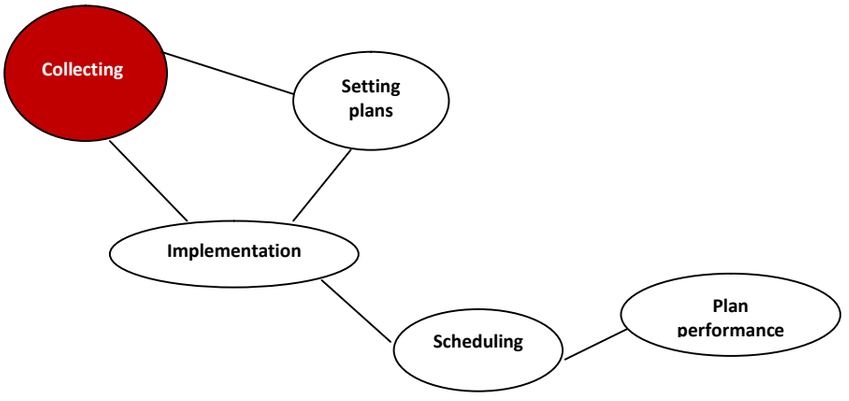
- Identify CRM needs – know what the customer needs or wants to manage his relationship with customers.
- Define the data collection – define what the customer needs to do to enable an efficient data collection or data about clients. Ex: register the customer when he buys in the store (name, email, what the customer bought, etc)
- Define customizations – What type of customizations is required in the system to attend the customer need. Ex: If the customer needs only the module of mailing to send promotions or he needs the complete data to target customers and create special offers for this group.



The collecting activity includes:

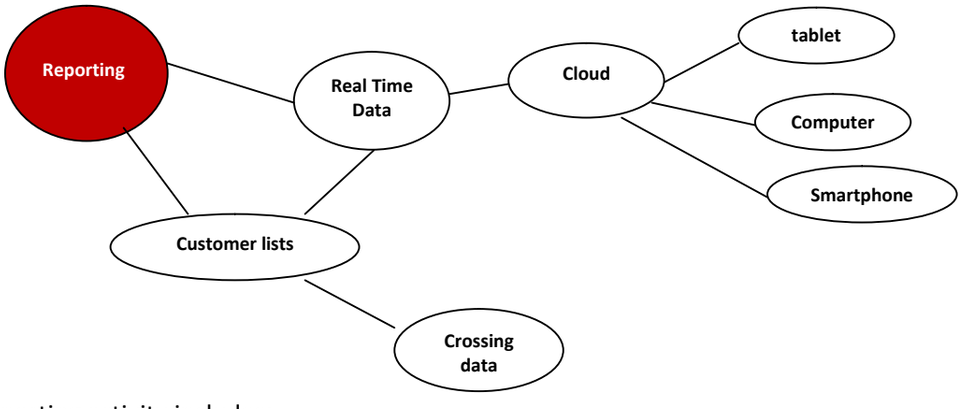
- Infrastructure settings – The defined plan must physically be configured in the platform and synchronized with the client's automation system.

- Implementation – The activity of implementation is scheduled according to technical IT standards procedures. (Ex: running systems requires plans to install and configure features or module to guarantee the integrity of existing data.



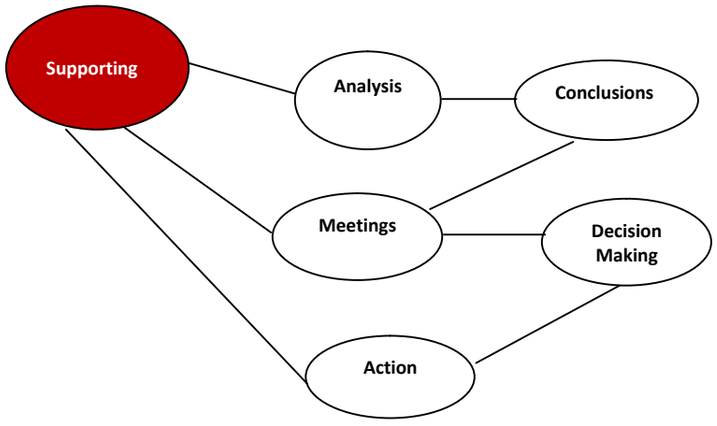
The reporting activity includes:

- Reports - The outcomes becomes tangible with the reports printing, such as: list of customers birthday mailing, list of sellers, list of old and new customers, list of most sold products, customer profile report and many other reports according to the customer plan previously defined.
- Real time data – Reports can be printed and data visualized in real time in the customer panel.

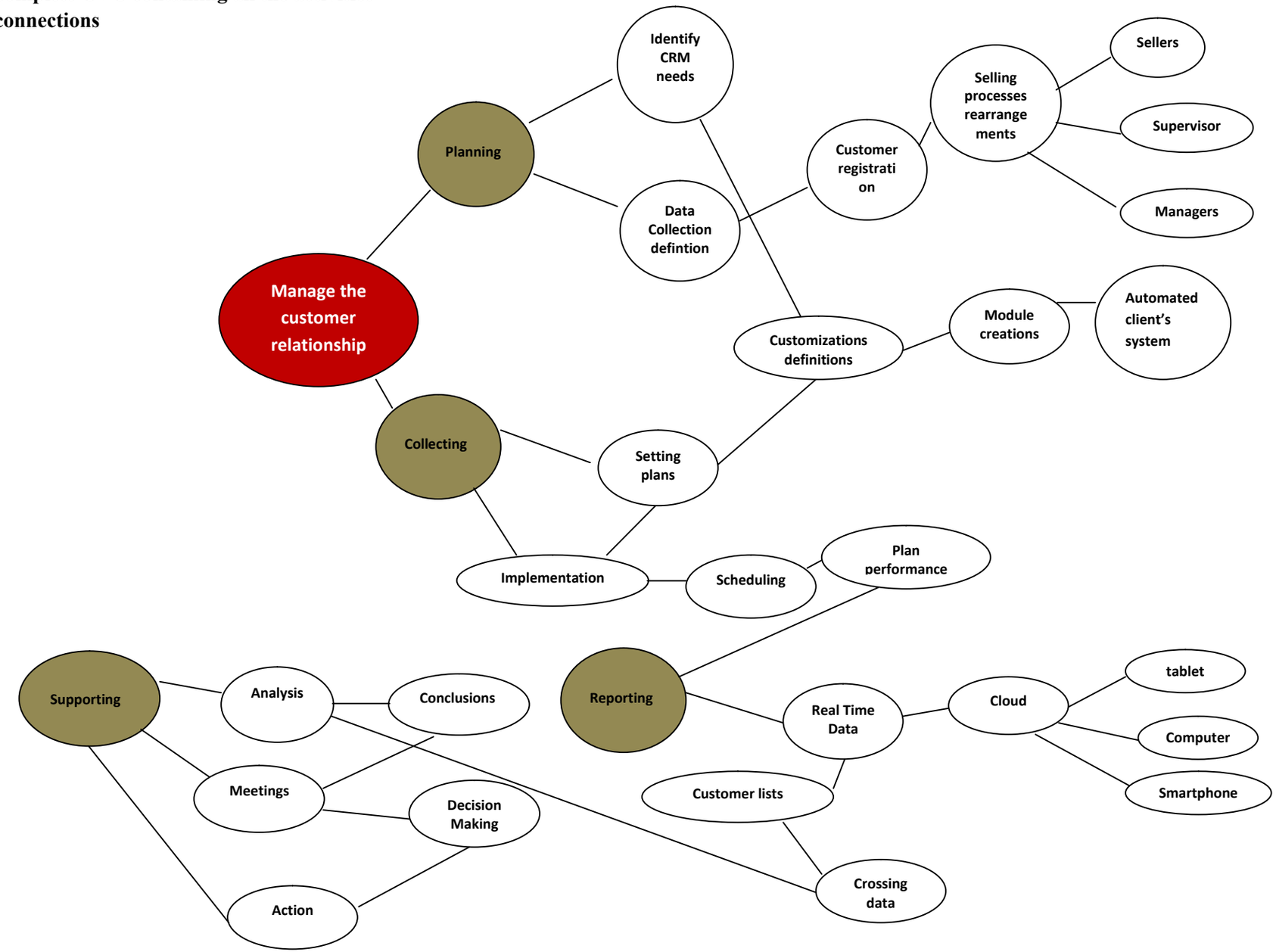


The supporting activity includes:

- Support analysis – All the data and reports will be previously analyzed by the service provider and some conclusions will be taken;
- Support Decision Making - These conclusions will be presented to the client in personal meetings;
- Action Support - The service providers also helps to plan the actions. Ex: send emails to a reported target (group of customers), plan promotions and communicate it, etc.


Supporting
Analysis
Conclusions
Meetings
Decision Making
Action

The complete CVC containing all the activities and connections

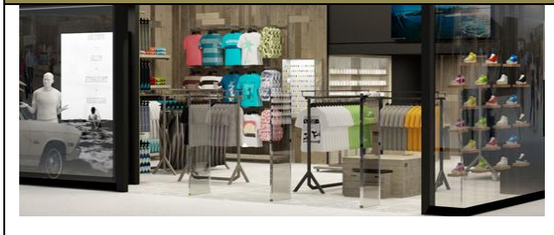


Appendix H:Personas

Personas Segmentation	
	
Clients who do not have any idea of what CRM is and how to implement it • The client has opened the store very recently (1-3 years); • He does not have any idea of what a CRM is or has a very generic idea.	**Clients, who have some idea of what CRM is, however do not know how to implement it.** • The client has been in the market for more than 3 years; • He knows what CRM is and its importance, however the firm's current structure does not allow him to manage the relationship with his customers.

In the table below, the first persona reflects the reality of clothing store focused on products to young people interested in a more sporting style. The staff is small and their behavior reflects the culture of the firm and image of the brand: young and relaxed. They do not know anything about CRM.

The second persona is a clothing store who has a medium experience in the market. The store targeted on outfits for professionals interested in formal outfits in varied ages. The staff knows what CRM is and its importance, however the company do not know how to implement a management focused on the customer relationship.

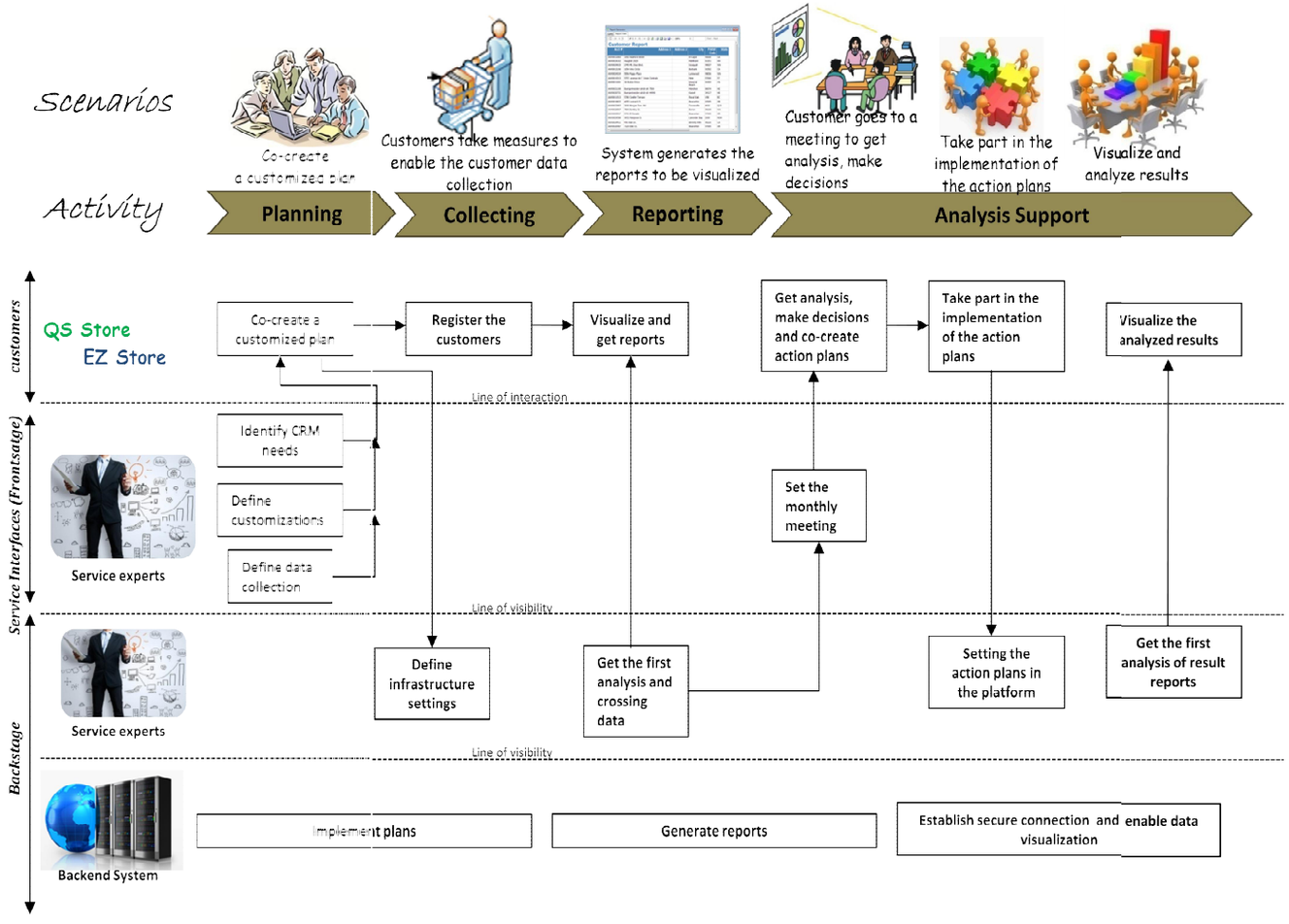
Personas Segmentation	
	
EM Store • 2 years in the market; • They do not know the customers • Do not have any process to register the customers • Marketing team do not have time to think about	**EZ Store** • 6 years in the market; • The owner knows a lot about CRM; • The firm had already been advised about implementing the CRM; • The marketing team is small and does not

CRM	have enough time to deal with CRM; • The CRM service providers and systems are too high.

Conclusions:

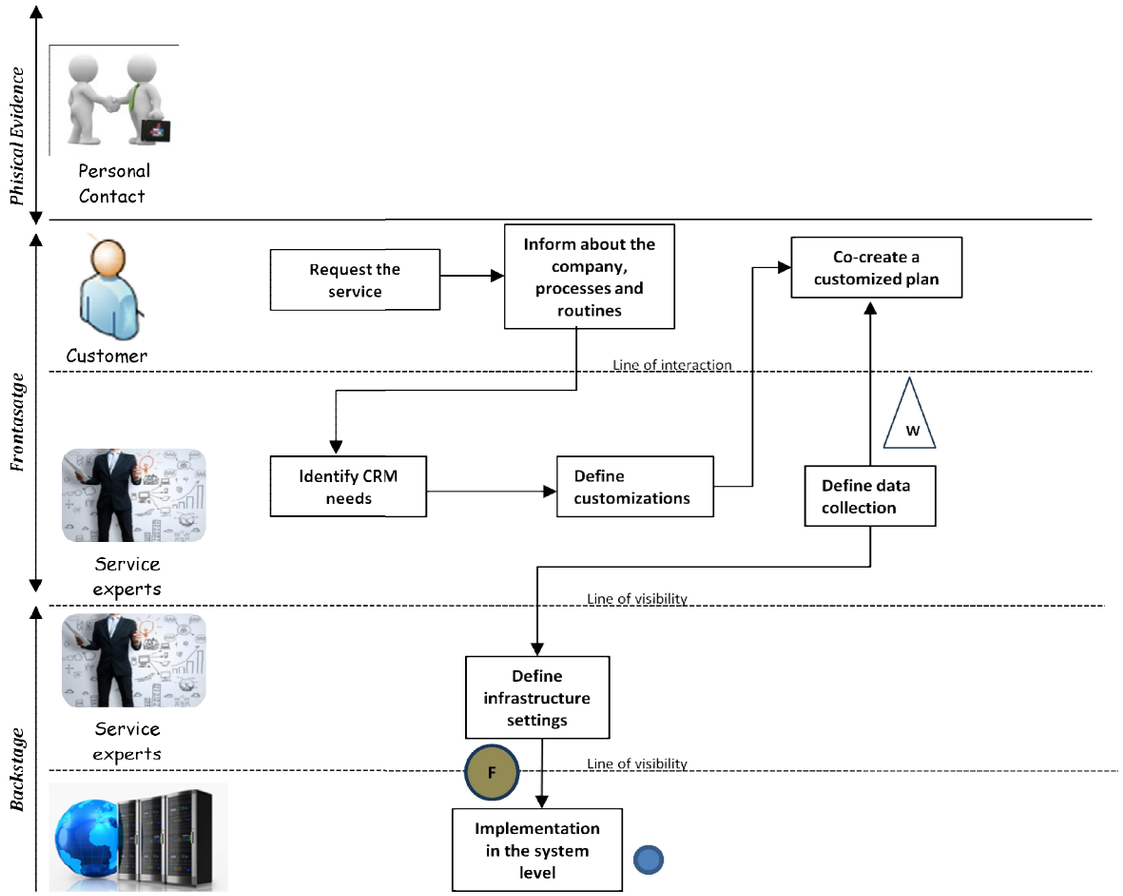
- ✓ Through the creation of some storyboards, firms like QS Store needs more attention in the beginning of the process because they need to know exactly what CRM is and the real benefits. The client must be supported during the whole process and is considered a more passive client with a low level of interaction in the beginning. The engagement grows as the client learns more about the CRM and the interaction level reaches the ideal.
- ✓ Due to the experience and knowledge about CRM, EZ Store is more engaged and the interaction level in the beginning of the process is higher than QS Store, however it is not the ideal because CRM is not part of the firm's strategy. The co-creation is more intense and some requests about extra reports and data crossing are part of the routine and become more intense as time goes by. The marketing team, supervisors and managers feel more comfortable with the CRM service offerings.

Appendix I: Service System Navigation

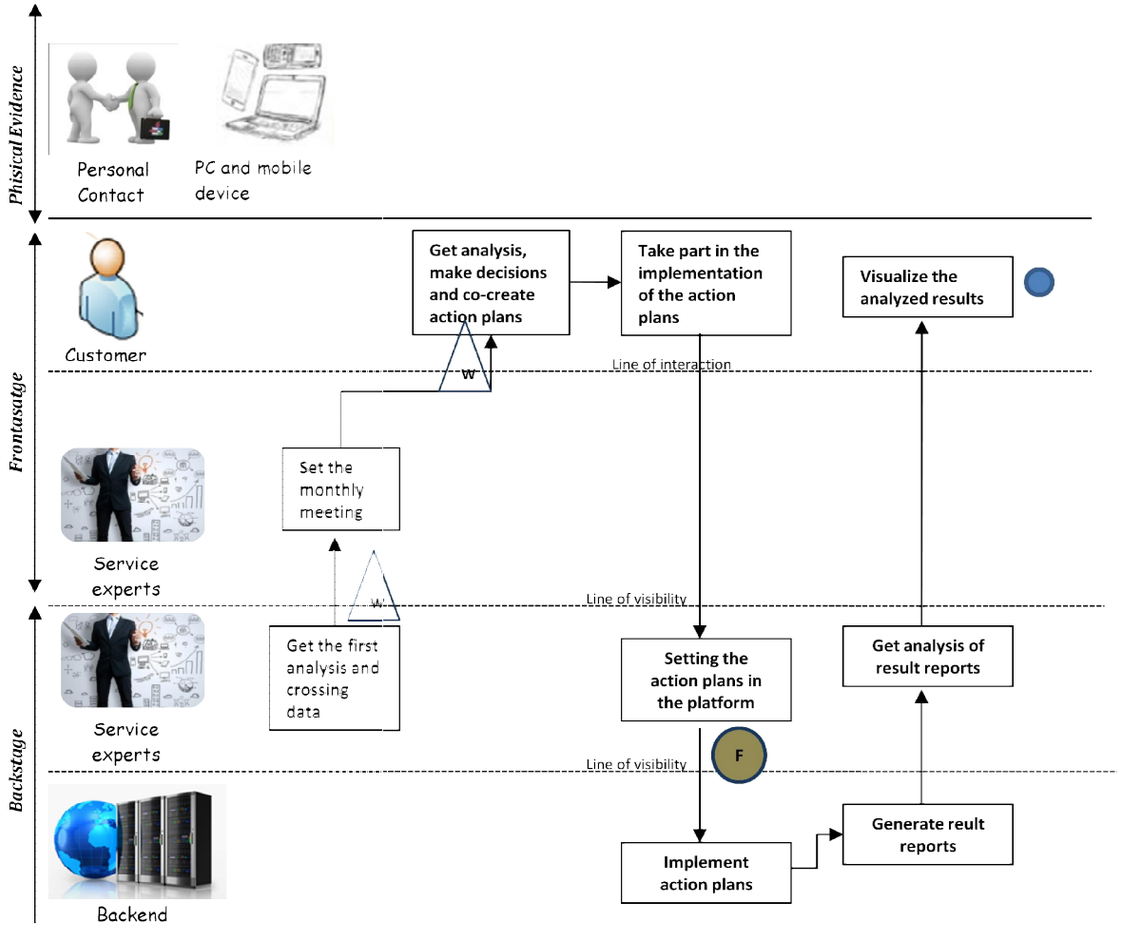


Appendix J: Service Blueprints

Planning



Supporting


Phisical Evidence
Personal Contact
PC and mobile device
Frontasatge
Customer
Get analysis, make decisions and co-create action plans
Take part in the implementation of the action plans
Visualize the analyzed results
Line of interaction
Service experts
Set the monthly meeting
Line of visibility
Backstage
Service experts
Get the first analysis and crossing data
Setting the action plans in the platform
Get analysis of result reports
Line of visibility
F
Backend
Implement action plans
Generate reult reports

Appendix K: Business Model Canvas

<table>
<tr>
<td rowspan="2">Key Partners

✓ researchers;
✓ lead users;
✓ clothing retailers;
✓ communities and associations of small retailers.</td>
<td>Key Activities

✓ manage back-stage and front-stage system;
✓ manage the CRM platform
✓ promote and organize the service offering for each client;
✓ prospect new clients.</td>
<td rowspan="2">Value Propositions

Provide full support to manage efficiently the relationship with your customers through a differentiated platform of data collection and analysis. This service enables the generation of relevant data, report analysis, support to make decisions and to implement action plans to enhance the relationship with your customer.</td>
<td>Customer

Relationships

✓ co-creation of plans, analysis of reports and implementation of action plans;
✓ Personal assistance through meetings, email and phone calls;</td>
<td rowspan="2">Customer Segments

✓ small clothing retailers.</td>
</tr>
<tr>
<td>Key Resources

✓ database and platform server based on cloud;
✓ human resources.</td>
<td>Channels

✓ online customer panel;
✓ personal meeting;
✓ phone calls;
✓ e-mails.</td>
</tr>
<tr>
<td colspan="3">Cost Structure

✓ wages;
✓ cloud service and server host subscription;
✓ fixed and variable costs (rent, energy, internet, telephone, etc).</td>
<td colspan="3">Revenue Streams

✓ fixed monthly payment;
✓ The monthly price is increased in 5% if the client requests extra reports and 2% due to extra data crossing.</td>
</tr>
</table>